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West AFRICA'S FATS and OILS INDUSTRY

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TABLE 1.--West Africa: Acreage, total production, and exports of peanuts, by country, average 1935-39 and 1950-54, annual 1955-58

Country	Average 1935-39	Average 1950-54	1955	1956	1957	1958[1]
ACREAGE	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*
French W. Africa	[2] 3,185	3,070	3,365	---	---	---
Gambia	---	[3] 215	---	---	---	---
Ghana	---	136	---	137	---	---
Nigeria	---	---	3,500	---	---	---
Portuguese Guinea	---	---	---	---	---	---
Total	3,185	3,421	6,865	137	---	---
PRODUCTION	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*
French W. Africa	785.0	906.0	1,140.0	1,350.0	1,560.0	1,200.0
Gambia	[4] 58.1	76.0	70.0	94.0	95.0	---
Ghana	---	48.5	41.3	52.2	44.8	---
Nigeria	[3] 600.0	843.0	1,125.0	850.0	1,390.0	1,140.0
Portuguese Guinea	[4] 28.0	[5] 36.7	[4] 29.2	[4] 38.2	[4] 45.8	---
Total	1,471.1	1,910.2	2,405.5	2,384.4	3,135.6	2,340.0
EXPORTS[6]						
French W. Africa	701.7	635.6	611.0	859.1	959.7	[8] 373.5
French Togo	2.2	4.1	4.0	4.9	[7] 2.7	---
Gambia	58.8	65.2	65.0	63.8	82.8	[8] 70.6
Nigeria and British Cameroons	354.7	546.6	796.7	888.4	657.1	574.8
Portuguese Guinea	[3] 28.0	39.5	36.8	38.2	45.8	---
Total West Africa	1,145.4	1,291.0	1,513.5	1,854.4	1,748.1	1,018.9
Total World	2,904.4	2,158.5	3,050.4	3,082.7	2,774.1	---
West Africa as percent of world total	*Percent* 39.4	*Percent* 59.8	*Percent* 49.6	*Percent* 60.2	*Percent* 63.0	*Percent* ---

[1] Preliminary. [2] 1 year only. [3] Average of less than 5 years. [4] Exports. [5] Commercial crop. [6] Peanuts and peanut oil in terms of unshelled peanut equivalent. [7] January through November. [8] January through September.

WEST AFRICA'S FATS AND OILS INDUSTRY

by Calvin C. Spilsbury
Fats and Oils Division

SUMMARY AND CONCLUSIONS

The production of fats and oils, oilseeds, and oil-bearing materials in West Africa will increase somewhat above present levels in the near future, but the rate of increase will not be as pronounced as in the period since the end of World War II. This publication will show that--

I. Potential peanut production increases of 10 to 15 percent in both French West Africa and Nigeria are possible within the next few years.

II. Slow but continued expansion in the production of palm products is to be expected, but domestic consumption is increasing and population pressures on food supplies will influence exports.

III. Improved culture, harvesting, marketing, and crushing will result in continued improvement in quantity and quality of export products.

IV. Controls on marketing, exporting, and processing of oil, oilseeds, and oil-bearing materials by governments will continue.

V. Government subsidies and producer price stabilization programs may be expected to continue, but more realistic pricing will be implemented.

VI. Weather will continue to be an all-important factor in determining the annual production levels for oilseeds, but research and extension will do much to improve cultural practices and increase long-term output. Successful research on improved varieties has, and will continue to decrease the influence of weather on annual yields.

The U. S. soybean or cotton farmer is many thousands of miles from West Africa,[1] but the primitive production of peanuts, palm oil, and palm kernels in that faraway land has an important influence upon the price he will receive for soybeans and cottonseed. This curious relationship results from the interchangeability of the use of fats and oils in food markets--particularly margarine and shortening--in the European market. This market, which is growing, includes primarily Germany, the Netherlands, Denmark, the United Kingdom, Belgium, France, and the Scandinavian countries. It has been the best postwar cash market for U. S. exportable supplies of soybeans and cottonseed oil; but now, more than ever on a long-range basis, they must compete in price with West African peanuts, peanut oil, palm oil, and palm kernel oil. West Africa produces the world's largest volume of readily available edible oil supplies. Exportable supplies of U. S. soybean and cottonseed meals must compete with West African peanut and palm kernel cake, produced in both West Africa and local European crushing plants.

France, the United Kingdom, and Portugal import the bulk of the fats and oils, oilseeds, and oil-bearing materials available in West Africa, and only the excess over their needs is available to other European importing nations. The volume exported, however, is sufficient to continue as a strong influence on the level of world prices for edible fats and oils. This will be particularly true if large supplies from India and China, which set prewar world prices, do not enter the Free World market. On the other hand, prices of West African palm kernel oil closely follow those of coconut oil and copra, and available supplies of all lauric acid oils from the Far East.

A large crop of peanuts in French West Africa, Nigeria, or both, such as that of the 1957-58 season, tends to push down prices received by U.S. farmers. Although West Africa's farmers use primitive production methods and farms are small, total production for export is large, making up nearly 60 percent of the world peanut exports in 1957.

West African farmers produce peanuts and palm products (palm oil and palm

[1] West Africa here refers mainly to French West Africa, Gambia, Ghana, Liberia, and Nigeria, including British Cameroons (Trust Terr.), Portuguese Guinea, Sierra Leone, and now French Guinea; but the bulk of oilseed and palm products are produced in French West Africa and Nigeria.

kernels) under price stabilization or marketing control plans that are aimed at maintaining a high level of farm income, but these products are often marketed through marketing organizations at world prices. Stabilized or controlled prices paid to producers have been markedly out of line with world prices since the war, particularly in the past two seasons. Marketing board and price stabilization fund practices have been able to absorb the effects of violent fluctuations in world prices since World War II. Producers' prices have been brought slowly back in line with the average of world market prices, but often at considerable gain or loss to the quasi-government stabilizing agency. The limited reserve funds of these agencies often determines the level at which prices are pegged.

Outlook.--Peanut production in West Africa has shown a substantial increase in the postwar period, something like the spectacular increase in U.S. soybean production. No futher large increase in fats, oils, and oilseeds output in West Africa is foreseen. Present indications are, however, that production of peanuts, other oilseeds, and palm products will continue to slowly expand above present levels and producer price reductions can be expected. But producers' reactions to lower prices are often indeterminable. In the Northern Region of Nigeria, if peanut prices go too far below present levels, some farmers shift to cotton. However, in most areas shifting to alternate crops is seldom feasible; production of cash crops is frequently increased at the expense of food crops to maintain income. There is every indication that the quality of products exported will continue to improve.

In French West Africa an expansion of commercial peanut production of approximately 10 percent to around 850,000 tons (shelled) (1.2 million tons in the shell) is expected in the near future. Here producer prices have been maintained at relatively high levels. Nigeria's commercial peanut crop is expected to increase in the years ahead, but average around the 1957-58 season record high level of 800,000 tons (shelled). Nevertheless, the 1958-59 crop in these major areas was considerably lower than that of 1957-58, primarily because of inadequate and unevenly distributed moisture during the growing season from June through September.

Potential increase in the production of fats and oils in West Africa is great. Nigeria's oil palm tree crop, which is not greatly affected by yearly price fluctuations, offers unlimited possibilities for increased production over the long period. The opening up of new virgin lands in French Niger and Northeastern Nigeria and other areas through improved transportation facilities and roads, and the planting of large government-sponsored palm estates in the Eastern and Western regions of Nigeria and French Dahomey, could bring substantial increases in production of oilseeds and palm products in West Africa in the not-too-distant future. Vast tracts of now uncultivated land could be opened up to oilseed production in the next 20 to 30 years. However, the shortage of technically trained personnel and development capital are limiting factors all over West Africa.

Also, expansion of oilseeds and palm products in West Africa will increase directly with and because of the following economic factors:

1. Increase in the demand for cash crops.
2. Increase in the availability of consumer goods.
3. Further expansion in population.
4. Development and adoption of mechanical equipment (such as the mechanical sheller and improved palm oil processing equipment).

On the other hand, industrialization in producing areas, resulting from discoveries of oil or minerals could seriously cut output of palm oils and peanuts by diversion of available labor and capital.

New mills for processing palm fruit, such as the one recently installed near Benin City, Nigeria, can recover 90 to 95 percent of available oil compared with 45 to 55 percent by traditional methods. A potential increase of 10 to 30 percent in oil output alone is a possibility of such industrialization.

INTRODUCTION

Agricultural production, particularly of oilseeds[2] and palm products in West Africa, is characterized by specialized production areas and primitive cultivation methods. In

[2] Peanuts are grown commercially in West Africa as an oilseed crop, and contain from 47 to 52 percent oil. There are many different varieties of both bunch and spreading type peanuts grown, but generally they are smaller than U. S. peanuts of similar types. Domestic consumption of oil-type peanuts for edible use is high, but commercial production of edible-type peanuts is negligible. In the United States peanuts are grown for edible purposes, and only excess are crushed.

most areas a single agricultural product is the major cash crop, and the economy of these areas fluctuates over the long run with the fortunes of the world market for the commodity. Diversification of production is usually based solely on competition between food crops and the single cash crop, such as peanuts. This is true particularly in areas where the lack of alternate crops or diversification is based on both soil and climate. In these areas, production is impelled to expand as the economy develops.

The bulk of agricultural production in these specialized areas is devoted to subsistence agriculture. Total production of oilseeds and oilbearing materials is unknown, but local consumption is known to be high--especially of palm oil. Production is measured usually in terms of the commercial crop. In Northern Nigeria and Senegal, French West Africa, where peanuts for oil crushing constitute the major cash crop, half of the cultivated land on many farms is planted in peanuts. On other farms, about 1 acre in 4, to 1 acre in 5 of the available land is devoted to the production of peanuts.

Commercialized or estate production of oilseeds and palm products in West Africa has been retarded by primitive land ownership practices, and only a few large palm plantations exist. Most farms are relatively small subsistence-type operations. Furthermore, specialized production of peanuts or palm products and subsistence agriculture on a primitive scale, exist side by side on the same farms. As a result, the income of the individual farmer is relatively low. Farm size has been adjusted to the primitive production methods and implements of cultivation used. Relatively few modern tools have been adopted, but some progress, including the adoption of plows and seeders, is being made in the more productive farming areas.

While harvesting methods have changed little in the peanut areas of Northern Nigeria in the last 3 years, there has been a complete revolution in home shelling methods, resulting from the introduction of a simple and inexpensive shelling machine.

Research funds have been made available from marketing or stabilization boards and other sources, and more technically trained personnel are now employed in oilseed and palm research. Scientific advances are being made in the development of new highly productive and disease-resistant varieties of peanuts and oil palms, that will aid in increasing production.

The economic advantages of specialized peanut and palm products output are evident in the commercial growth of ports and shipping points of West Africa.

Agricultural shows and demonstrations are an important part of farmer education and have aided in overcoming some suspicions regarding attempts to abandon primitive traditional methods. These shows have interested many farmers in modern methods. They have, for example, demonstrated the value of modern and improved fertilizing, mixed farming, machinery, plows, and seed planters, and modern methods of decorticating or shelling peanuts. Some farmers are gradually accepting and using improved cultural methods, planting improved seed varieties, applying more fertilizers and manure, and using better harvesting and marketing practices.

PRODUCTION CHARACTERISTICS

Throughout West Africa primitive hand tools and methods are used to produce the bulk of the export crops. The long-handled hoe or hilaire, designed by a French scientist and used by the Senegalese farmer, the short-handled hoe of the Hausa farmer of Kano, and the machete of the Ibo palm farmer, all are essential implements of production, and represent skillful developments of primitive agriculture.

There are many other characteristics of primitive production so often seen in West Africa that would not be familiar to American oilseed farmers. Very few "mixed farms" exist, and in many areas there is a complete absence of draft animals, particularly where the tsetse fly is prevalent. As a result, the average farm is very small, generally ranging from 3 to 5 acres. Mechanization is almost nonexistent and does not appear to be increasing rapidly.

Partially cleared land is used for peanut crops. The land is often cleared by fire after the fallow period and following harvest, leaving stumps, large trees, and bushes standing in the farming areas. Continuous cropping is practiced only in the close-farmed areas, and in most of West Africa exhausted crop land is allowed to grow up in bushes and trees for from 3 to 30 years, a practice known as "bush fallow." Fertility of the soil is maintained by communal grazing and the use of night soil, farmyard manure, and household refuse.

Planting and harvesting methods are primitive. Random planting of crops such as peanuts is still prevalent, although the practice of ridging has been adopted on some farms. In many places oilseed crops are interplanted with food crops. Some crops, particularly palm fruit and some peanuts, are harvested from self-sown trees and plants. Peanuts and other oilseeds are often picked by hand, and the ancient practice of winnowing is common.

Land ownership by the tribe or Emir in Mohammedan areas has brought about a separation or fragmentation of the farm production units. Farmers in many areas live in villages and farm the lands in outlying areas. Part of a farmer's alloted land, used for the production of grains and peanuts, may be in the uplands, and another part, used for the production of rice and vegetables, may be in the valley or river areas. Village processing is common, particularly with palm oil, as nearly 90 percent of the palm oil is processed in small home mills.

MARKETING

Fats and oils produced in West Africa can now be used in edible food products more than ever before. Supplies of edible peanut oils and other edible oils from West Africa have been augmented in the past 10 years by a large supply of edible palm oils. Upgrading of fats, oils, and oilseeds in Nigeria and French West Africa has developed remarkably in the last few years. Palm oil and palm kernel oil, formerly used principally in soap (synthetic detergents are now making heavy inroads on soap consumption), are now used extensively in margarine and shortening in Western Europe as a result of their improved quality. In Europe, fats and oils of varying characteristics and melting points are blended to utilize supplies from all over the world, particularly West Africa, the United States, and the Far East.

Peanut exports from West Africa have increased greatly since the war. Nigeria annually exports about 400,000 to 550,000 tons of shelled nuts, compared with approximately 200,000 in the prewar period. French West Africa exports from 300,000 to 350,000 tons of shelled peanuts each season, in addition to large quantities of peanut oil.

Production of peanut oil has increased since the war as crushing operations have expanded in French West Africa and Nigeria. Peanut oil exports from French West Africa in recent years have been about 110,000 tons each season. The bulk of the oil is exported as crude, but about 10 percent refined oil is exported primarily to North Africa. Peanut oil is also exported from Nigeria; the total volume is now about 40,000 tons each year.

In Nigeria, the Nigerian Produce Marketing Company, Ltd. (a quasi-government institution), handles the export marketing of peanuts, palm kernels, palm oil, and other oilseeds. It has taken over the functions of the old Nigeria Central Marketing Board and maintains its headquarters at Lagos with a sales and executive staff in London to facilitate export operations. Bulk contract arrangements with United Kingdom users of oilseeds and oils have been used, and in 1957, 40 percent of the total tonnage of peanuts, palm products, and cottonseed exports was handled this way. Nevertheless, the sales policy in recent years has been to promote sales on the open world market.

There is no equivalent organization in French West Africa, and most exports there are handled by private companies.

THE EUROPEAN ECONOMIC COMMUNITY

France is the only member of Western Europe's Common Market that has a vested interest in West Africa, and seven former territories of French West Africa now belong to the French Union as self-governing republics. France has already committed over 50,000 tons of oilseeds each year to other nations in the marketing community and production of oilseeds--particularly peanuts--in line with the EEC's stated agricultural policy, will have to be maintained at high levels through increased productivity to meet this commitment.

Producer support levels for peanuts in Senegal were established at around 22 French West African francs per kilo unshelled (4.1 cents per pound) in 1958-59, but resulting prices were somewhat above world market prices outside of the French controlled areas. There is some concern that the development of the Common Market in Western Europe may cause price reductions that will directly affect the economy of Senegal because of the importance of peanuts as the main cash crop. Also, Senegal may try to produce more to maintain income.

The French Government has recognized that it may have difficult problems in adjusting price levels in French West Africa

TABLE 2.--French West Africa: Exports of oilseeds, oils, and oilcake, average 1935-39 and 1945-49, annual 1950-58

Item	Average 1935-39	Average 1945-49	1950	1951	1952	1953	1954	1955	1956	1957	1958
Oilseeds:											
Peanuts:	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Shelled.....	166,059	197,852	220,824	183,781	199,249	218,986	260,705	173,334	313,631	383,827	480,709
Unshelled.....	438,287	4,665	1,341	25,784	23,047	28,479	41,990	20,217	13,663	5,825	106
Palm kernels....	85,254	59,621	93,096	82,951	70,665	94,465	89,568	93,520	95,231	86,846	87,738
Shea nuts.....	[3] 12,927	16,760	10,385	14,596	22,590	8,786	9,133	9,133	6,981	3,890	5,788
Castor beans....	1,194	1,790	709	894	1,201	891	862	890	558	581	[1] 589
Sesame.....	[3] 761	---	619	651	876	890	461	856	---	---	[1] 2,545
Cottonseed.....	---	1,756	1,602	1,955	2,353	735	1,212	1,595	---	---	---
Copra.....	[3] 330	628	316	797	404	3,459	1,056	665	562	239	[2] 446
Oils:											
Peanut oil:											
Crude.....	[3] 6,015	38,332	63,492	51,019	55,836	99,466	98,837	89,910	96,261	94,932	105,414
Refined.....	---	---	15,195	7,897	9,969	9,401	4,237	6,007	12,603	14,726	14,341
Palm oil.....	22,691	5,408	12,345	16,004	10,463	18,012	15,844	20,141	19,919	13,005	14,337
Shea butter.....	4,204	16,760	833	851	1,970	731	1,394	1,006	2,676	833	20,041
Oilcake:											
Peanut.....	[4] 15,189	68,184	93,694	73,965	106,032	135,474	140,595	129,638	155,633	155,463	163,087
Other.....		[3] 1,121			([5])	4,220	3,844	8,064			[3] 1,594

[1] January through August. [2] January through September. [3] Average less than 2 years. [4] 1938. [5] Not available.

TABLE 3.--Nigeria: Exports of vegetable oils and oil-bearing materials, average 1935-39 and 1945-49, annual 1950-58

Commodity	Average		1950	1951	1952	1953	1954	1955	1956	1957	1958
	1935-39	1945-49									
	1,000 tons	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*	*1,000 tons*
Peanuts, shelled...	236.4	300.4	354.9	158.4	291.6	365.9	479.2	444.5	501.9	338.7	574.8
Peanut oil.....	---	.2	3.9	4.5	11.1	20.9	34.3	37.6	39.3	43.2	44.3
Palm kernels.....	353.5	355.9	459.5	388.6	419.1	451.2	519.8	485.2	505.2	454.9	494.1
Palm oil.....	153.9	145.7	193.8	167.8	187.4	224.8	233.5	203.9	207.4	186.1	191.0
Sesameseed.....	15.4	10.4	16.1	12.7	15.1	13.7	17.0	14.4	24.9	21.5	13.7
Cottonseed.....	12.5	3.5	18.5	23.9	10.2	27.7	39.9	58.2	41.8	32.8	67.5
Soybeans[1].....	---	---	---	---	---	---	10.6	10.0	11.4	17.2	15.9
Shea nuts.....	5.8	6.9	3.7	18.8	16.7	.7	4.6	6.9	4.3	6.9	13.2
Copra.....	.2	.4	1.1	7.1	4.0	6.5	7.3	7.9	5.3	4.6	6.0
Palm kernel meal...	---	[2] .2	.6	.7	1.2	1.2	1.0	1.2	.9	1.2	1.0
Peanut cake[1].....	---	---	---	---	---	---	45.7	42.9	47.6	47.0	65.3

[1] Separately classified beginning 1954.
[2] Average 1947-49.

to those of the EEC, but political considerations keep producer prices up and as a result, the French consumers will be forced to pay higher prices.

PEANUTS, WEST AFRICA'S MAJOR CROP

West Africa, since the end of World War II, has been the world's foremost exporting area for peanuts and peanut products. However, it ranks only third as a producer of peanuts, falling far behind India and China, where nearly all of the particularly large crops of peanuts are consumed domestically.

Peanuts in West Africa--mainly French West Africa, Nigeria, Gambia, and Portuguese Guinea--are grown for export, and in these specialized production areas they are a major source of export credit. Particularly is this so in Gambia and in the peanut areas of Senegal and the Niger, in French West Africa, and in the Kano area of Northern Nigeria. Here peanuts are grown in specialized production areas where they are by far the major source of cash income for farmers and where for most soils there is no alternate cash crop. However, in Nigeria cotton grows well in the southern peanut areas.

In Senegal, where 75 percent of the French West African peanuts are produced, there has been little change in the acreage under peanut production since before the war. However, a shift to higher production areas and increased use of fertilizer and improved seed varieties has expanded total and average yields. Yet in other areas, yields have fallen off seriously. In the declining areas of North Senegal, unscientific primitive culture has resulted in a gradual fall in fertility and an irredeemable impoverishment of the soil.

In many parts of West Africa the increase in population and consequent demand for cash crops has caused a considerable shortening of the fallow period--often to a dangerous extent. Where farming has become intensive, the fallow period has been dispensed with entirely and many areas have been completely stripped of organic matter. Impoverishment of the soil is serious in the heavily populated areas of West Africa, and considerable attention is now being directed toward preventing further destruction. Peanut production areas in both Senegal and Northern Nigeria show evidence of overburdening of the soil, particularly in Northern Senegal.

Increased acreages have been planted to peanuts in Northern Nigeria and in the French Niger. In these regions, commercial production has increased substantially above the prewar level.

Peanuts are planted in West Africa just prior to, and at the beginning of, the early rains from April to June and do well on from 25 to 40 inches of annual rainfall. African farmers have always recognized the value of crop rotation and in most areas they seldom plant peanuts on the same plot in 2 successive years. Planting is usually preceded by weeding and burning the bushes that have grown up in the fields. Ridging is also practiced, particularly in the heavier soils. This is accomplished with hand implements, and in heavy production areas a few ridging plows are used.

Planting is done by making a hole with the heel of the foot or with a stick or hoe, and dropping in several shelled nuts (often two), then covering with earth by the foot. However, in some areas self-sown crops are allowed to mature; also, peanuts are often planted mixed after grain sorghum and millet. As peanuts are a leguminous plant, they require little nitrogen, but in Nigeria they have done well with small applications of superphosphate which is placed around the growing plant. Balanced fertilizers are used in French areas in very limited quantities. The average field is small, usually less than a half acre in Northern Nigeria. Often, spacing of plantings is bad when done by foot and yields are low. Ridging and seeders, (both hand and animal-drawn) have helped to increase production.

After planting, the fields are weeded once or twice with a short-handled hoe; then the large weeds are pulled from the area several times. In the northern and sandy areas the spreading type of peanut, which is more productive, prevents mechanical cultivation, but the upright type cultivated on the heavier soils allows mechanical treatment. In many areas, poorly mixed types of African seed are used exclusively.

Of course, the development of the crop depends upon well-spaced rains throughout the summer. Toward the end of the rains in September and October through to November, when the 6 months dry season begins, the crop is harvested.

The vines are usually pulled from the ground by hand, often with the aid of a hoe, and stacked in piles to dry. After drying they are moved to the farm compound or a central location in the field, where women

hand-pick the peanuts from the vines. This job, however, is often a family operation, with men pounding the vines with clubs to free the pods, and the women winnowing the broken vines to obtain the unshelled peanuts. Shelling the nuts is frequently done on the farm. The women break the pods with a mortar and pestle or a mechanical hand sheller, if available, and then the broken material is again winnowed to obtain the clean shelled nuts. In Northern Nigeria mechanical hand shellers have come into widespread use since 1954 or 1955.

PEANUTS AND PEANUT PRODUCTS IN FRENCH WEST AFRICA[3]

Considerable land areas of French West Africa are ideal for the production of peanut types suitable for oil. As a result, peanuts and peanut products (oil and cake) have become the major export commodity. Bolstered by the relatively high prices paid by France under price stabilization programs, French West African farmers have produced more and more peanuts, for the most part at the expense of food crops. In 1957-58, expansion of peanut production extended beyond the demands of the French economy (38,500 tons). The problem of finding a cash crop substitute for peanuts remains unsolved. World markets cannot absorb French West Africa's peanut production except at prices well below present levels paid to farmers. Therefore, to move large crops in the future, some form of economic adjustment will be necessary, either in production, prices paid, or continued export subsidies.

Although the farm economy is based on the monoculture of peanuts on less than half the arable land, food crops are not always plentiful. Millet, sorghum, maize, cassava, potatoes, beans, and the like, which supply most of the domestic demands, are often supplemented by imports of food, such as rice, from other colonial areas. African farmers have developed a demand for consumer goods that has been supplied by the high-priced French market. For example, the number of bicycles in French West Africa has tripled in the past 5 years and motor vehicles have increased sevenfold in 10 years.

[3] The Federation of French West Africa began to be dissolved on April 1, 1959. There are now seven internally self-governing Republics and Guinea. These Republics are Senegal, Mauritania, French Sudan, Niger, Upper Volta, Ivory Coast, and Dahomey. Togo is a French Trust Territory.

Many problems involving the high prices paid farmers for peanuts now face government officials in French West Africa, and both political and economic forces have become important in formulating price policy. For the 1958-59 crop a temporary fall in the world prices of peanuts and other fats and oils was overlooked and prices were fixed at high levels. Prices of consumer goods, on which farmers spend most of their cash income, also remained high.

Production

Weather conditions will continue to be the greatest single influence on yields and total production. But as research progresses and improved varieties and cultural practices are adopted, peanut production may tend to continue upward, regardless of the setbacks from unfavorable weather. In fact, present research indicates that varieties now being developed have a longer production period and may overcome some of the adverse effects of weather. The importance of weather in determining the size of the peanut crop is indicated by the 1958 yield. Heavy rains shortly after planting time in peanut areas of West Africa during 1958 indicated a large peanut crop similar to those of previous years. However, during the following months the rains were not well distributed, particularly during the blossoming period, and early forecasts for a large crop were withdrawn. This adversity was sufficient to reduce production nearly 10 percent, and as a result, the commercial crop in French West Africa was somewhat below that of 1957-58.

Some Senegalese farmers have found that animal-drawn plows and seeders, as well as fungicides and fertilizer, will increase yields and their total cash income from farming. However, by far the greater number of farmers continue to farm without draft animals, using only simple hand implements. The use of hand-seed drills is increasing.

More extension work is needed. Local agricultural officers are helping to extend the vast amount of technical knowledge that has already been developed, but personnel and funds are lacking to train sufficient numbers of extension workers.

There is constant competition for land between cash crops and food crops in French West Africa, and African farmers usually plant peanuts for cash to the detriment of their own food supply.

The advantage of raising peanuts over food crops has been estimated at around

TABLE 4.--French West Africa: Fats, oils, and oilseeds marketings, by Republic, 1951-52--1958-59

Republic and commodity	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59[1]
Senegal:[2]	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Peanuts, unshelled.....	488,268	494,777	607,933	429,609	594,630	746,466	891,173	770,000
Palm oil.....	133	54	328	242	131	26	---	---
Palm kernels.....	2,981	3,095	6,388	3,690	6,032	3,589	---	---
Sudan:								
Peanuts, unshelled.....	56,658	11,725	51,108	70,076	94,447	80,444	98,050	82,700
Peanuts, shelled.....	8,818	25,125	6,098	5,928	7,685	7,926	5,862	---
Guinea:								
Palm oil.....	4,167	54	1,598	1,360	63	---	---	---
Palm kernels.....	23,450	31,908	28,997	23,646	22,419	23,014	14,486	---
Sesame.....	761	845	982	385	535	204	---	---
Ivory Coast:								
Peanuts, shelled.....	750	3,744	164	347	686	154	897	---
Palm oil.....	2,856	1,670	1,820	1,567	1,719	1,101	201	---
Palm kernels.....	5,182	12,348	8,045	11,588	14,300	2,102	7,242	---
Upper Volta:								
Peanuts, shelled.....	7,985	5,519	2,192	1,599	1,703	---	---	---
Dahomey:								
Peanuts, unshelled.....	---	---	---	---	---	---	14,228	[3] 33,000
Peanuts, shelled.....	2,002	2,146	5,409	9,237	10,756	10,047	4,395	---
Copra.....	420	2,425	1,244	296	182	---	---	---
Palm oil.....	9,437	18,117	19,522	955	20,064	13,401	18,201	---
Palm kernels.....	40,021	54,662	52,941	19,284	52,611	42,770	38,515	---
Niger:[2]								
Peanuts, shelled.....	37,588	43,932	69,136	66,641	107,761	87,276	108,571	92,400

[1] Preliminary estimate. [2] Peanuts crushed for oil included in total marketings. [3] Including all other Republics.

High Commission, Dakar, French West Africa, Bulletin of General Statistics of French West Africa and other official African sources.

$18 per acre. At present, high prices of 4.1 cents a pound for peanuts to the producer, total income at the average (1957-58--861 pounds to the acre) would be $35.30 per acre. But total returns for food crops would be only about $15 to $17 per acre.

In Senegal, which is the second largest peanut producing area in West Africa, an effort has been made to increase acreage in the Casamance area of the south. The present area under peanut cultivation has been estimated at around 925,000 hectares (nearly 2.3 million acres), but the policy of the agricultural officials is to increase quality and yields rather than the area under cultivation. In the past, as already mentioned, improper land use led to the permanent depletion of land in several sections of North Senegal around Saint Louis. Here average yields are half (446 pounds per acre) that of South Senegal (Casamance), (987 pounds per acre). In this area the soil is fragile and has suffered from peanut overcropping. To remedy the situation, improved farming methods are being demonstrated by government agricultural workers, and Senegalese farmers are starting to improve their practices.

An effort has been made in Senegal to induce farmers to use more fertilizer, and the government has provided imported fertilizer at prices somewhat below cost. There is only a small local production. The total amount used in 1956 and prior years has been around 4,500 tons each season, but the rate is increasing as the result of fertilizer demonstrations that have been put on for several years. Farmers have been using around 155 pounds per acre and total use in 1957 and 1958 was over 7,000 tons.

Land laws are incomplete in Senegal, as land usually is not held by the government but most often by tribes. Where no tribal law exists, farmers from other areas often take temporary possession of the land. Fortunately, this type of extractive agricultural practice is not widespread; only 5 percent of Senegalese farming can be classified as entirely extractive.

French Niger, one of the most inaccessible peanut areas, is the second most important production area in French West Africa, and the region that offers the best opportunity for expanded output. Peanut production is expected to be increased 55 percent in this area within 5 or 6 years. An increase in acreage of an estimated 33 percent is projected, and production per acre is expected to increase to 670 pounds, about 25 percent above present levels of approximately 535 pounds. From a present production area of approximately 750,000 acres, producing an unshelled peanut crop of about 213,000 short tons, the expansion in area is anticipated by 1964 to reach close to a million acres which could easily produce 330,000 tons.

Programs to encourage production of peanuts in Niger include drilling wells for drinking water, varietal improvements, cultural improvements, and establishing a crushing industry.

In several areas where peanut production is expanding, it is possible for African farmers to raise a crop during the heavy rainy season. But during the dry season it is not even possible for farmers to live there unless provision is made to supply water for household use. At least 90 wells have been dug in the Niger in recent years, many of which have helped establish new villages--some in peanut areas.

Varietal improvements have been slow in the Niger, but research carried on since 1945 has evaluated local varieties and introduced improved varieties from other areas. Selected varieties have been tried at different places in the territory since 1956. Distribution of improved varieties will soon be made.

Cultural improvements, soil preparation such as plowing, seed dressing, weeding, rotations, and use of mineral fertilizers and fungicides, have been studied, and the results indicate that further possibilities exist for increasing yields per acre. Fertilizer trials show that from an economic point of view, wherever rainfall exceeds 24 inches, fertilizing is profitable in the major peanut areas. Other tests are now in progress on spacing, hand-operated seeding equipment, and use of draft animals. Other developments, such as the introduction of a hand shelling machine, may also aid the peanut industry.

Research

At the Agricultural Experiment Station (Centre de Recherches Agronomiques), in Senegal, considerable progress has been made in the study of cultural practices. As an aid to implementing these practices, subsidies in the form of free or below-cost fertilizers have been given to farmers through the several cooperative societies, to increase fertility and prevent depletion of crop lands. In some sections where there is supervision, particularly near the experiment station at Bambey, green manure crops (millet) are being introduced.

At the present level of scientific development at Bambey, continuous selection and introduction of improved disease-resistant varieties with both higher oil content (50 to 52 percent) and higher yields per acre most certainly will result in increases in production. It is estimated at the present time that over 60 percent of the seeds planted in Senegal are of selected varieties controlled for purity and germination.

Selection and breeding of varieties of peanut plants resistant to the destructive Rosette virus at Bambey deserve commendation. Successful completion of this program will do much to increase and maintain yields in Senegal.

The Bambey Research Center works in close cooperation with the IRHO (Institut de Recherches sur les Huiles et Oléagineux) and with the various research stations in all peanut areas of French West Africa. Native varieties are tested and selected for the most desirable characteristics for each area.

Experiments with mechanized farming have been conducted in the Casamance in southern Senegal by the CGOT (Compagnie Générale des Oléagineux Tropicaux). Also, experiments have been carried out in cooperation with local farmers at Kaffrine; but mechanization has not been too successful, as no satisfactory method has yet been developed for mechanically harvesting, lifting, and picking peanuts. Traditional methods and equipment are being improved.

Marketing and Exports

Marketing peanuts in Senegal is directed through the Peanut Stabilization Fund, but actual marketing and exporting is carried out by private interests. Acting in cooperation with the various interested Ministries of the Senegalese Government, the Ministry of General Economy, Ministry of Cooperation, Ministry of Rural Economy, the Chamber of Commerce, and business interests, including crushers and peanut buying agents, the directors of the fund establish the price structure and marketing period for peanuts. The price structure was established prior to the marketing season at the same levels from producer through to the final sale to Metropolitan France crushers for both the 1957-58 season and the 1958-59 season, which opened December 15.

With the dissolution of the Federation of French West Africa and the setting up of self-governing republics, the present system of marketing peanuts may change considerably in the next few years.

Peanut marketing in French West Africa is now on a comparatively free basis. Only peanuts that are excess to the French Union are taken over by the government-sponsored exporting organization, the SIOFA (Société Interprofessionnelle des Oléagineux Fluides Alimentaires). The minimum prices paid to producers and middlemen through the entire marketing channel have been fixed by the government. Growers prices are established at each of the main marketing centers or listed buying centers in the producing areas. There is no board or agency responsible for buying and marketing peanuts as in British territory but marketing peanuts through government-sponsored cooperative societies is being extended. The government does, however, apply marketing regulations, which establish the period of marketing and regulates--by inspection at stations located on all the main roads to the buying stations--the quality of peanuts allowed to be sold.

One of the reported deficiencies of the marketing system appears to be the lack of control over peanut purchases. Buyers are not licensed, and during the 1957-58 marketing season, many were reported to have paid less than the minimum fixed prices. Buyers were able to do this by making forward credit advances at high interest rates against the unharvested peanut crop.

Peanuts in French West Africa are marketed almost exclusively for crushing into oil and cake, but domestic consumption for food, and also for domestic processing for edible peanut oil and meal, is high. Domestic use of peanuts in Senegal has been estimated at 10 percent of production, except in years of short grain crops; then consumption of peanuts increases substantially. Also, the peanuts saved for seed and other uses--usually around 5 to 10 percent--are then consumed. In the Sudan and Niger the total consumed for food and seed is around 25 percent, while in the other areas, where production is small, consumption at times may be up to 85 percent of production.

In general, peanuts are marketed in the shell in Senegal, but in the interior regions, particularly in the Sudan and Niger, peanuts are purchased both shelled and unshelled from farmers. With the long transportation routes from the interior areas, however, more economical transportation is obtained by moving shelled peanuts.

Marketing peanuts in the French Niger poses a complicated problem because of

the great distances to port and the resulting high transport costs. These costs, which include combined rail and truck transport of over 1,000 miles through Nigeria, have resulted in total costs of peanuts at port that are double those received by the African farmers. Moreover, the farm price is well below that received in Senegal. While around 25,000 to 35,000 tons of each crop is now being moved to port by truck through Dahomey, the balance of the crop moves through Nigeria by truck to the rail head at Kano at a much higher cost, and then to port on the Nigerian railway, which is already overburdened with the Nigerian peanut crop. In an effort to solve this difficult marketing problem, attempts have been made to improve the Dahomey marketing operation by orderly direction of transport in French areas. This includes the utilization of back-haul; after peanuts are shipped to the port of Dahomey, imported goods and commodities available in port areas are carried inland on the return trips.

Prices

The price control system in the French Union has maintained prices of fats and oils and oilseeds from 10 to 40 percent above world levels, and under present established minimum ceilings, peanuts and soft edible peanut oils move mainly into France and North Africa. On the other hand, peanut cake has moved freely to the Scandinavian countries, since it is sold at world market prices.

While the system of price ceilings sets the minimum price high (equal to about 9 cents per pound for peanuts shelled c.i.f. Metropolitan France), it has stabilized prices received by producers (equal to about 4.1 cents per pound, unshelled basis, Dakar) for peanuts in Senegal, and generally prevents sales in foreign overseas markets without the SIOFA interceding. This government-sponsored company buys the carry-over peanuts at the established minimum price from French oilseed dealers and holds them for consumption in the French Union or for export, by taking the loss from its own reserves. Nevertheless, excess peanuts were produced in 1957-58; in the 1958 calendar year 61,000 tons of shelled peanuts actually reached the free market, including over 12,000 tons to Morocco. Since the end of World War II, peanut oils have been partially replaced in many traditional markets in Western Europe by U. S. soybean and cottonseed oil. As a result, French West African peanut oil and peanuts that reach the free market are highly competitive in price with these soft edible oils.

Prices received by producers in French Sudan and French Niger are reduced by the transportation differentials. Thus prices are considerably below those in Senegal. During the 1957-58 season many farmers were induced by buyers to sell peanuts at prices below established minimum levels, which resulted in low incomes for farmers.

The price established is only a minimum, and prices paid have at times varied above the minimum price. The price structure also indicates the prices paid at various stages in the marketing channel in Senegal and includes export taxes. The basic price in the 1958-59 marketing season of $201 per metric ton c.i.f. Metropolitan France was somewhat above the market price of Nigerian peanuts c.i.f. European ports in the early part of the season, but world prices soon climbed to near this level in early 1959. In this price structure is a cost of $2.04 per ton of shelled peanuts to finance the stabilization fund for supporting the market.

Crushing Peanuts

Senegal has a modern peanut-crushing industry, including mills with pre-pressing solvent-extraction systems and with an annual capacity of about 550,000 short tons of unshelled nuts. Utilizing around 80 percent of this capacity, the industry now crushes about 440,000 tons and ships over 110,000 tons of crude (80 percent) and refined (20 percent) peanut oil and over 150,000 tons of peanut cake to Western Europe. An additional 22,000 to 27,000 tons of refined oil are produced for local consumption. Designed to handle unshelled bulk peanuts, the crushing industry has developed extensive shelling facilities and a highly specialized system for the utilization of peanut shells for fuel, the sole source of the industry's power. Not only is this highly economical, but processing and shelling in the producing areas provides for the export of high-quality peanuts and peanut products. Oil recovery in the efficient pre-pressing solvent-extraction units is very high, and at some mills solvent flakes are produced with about 0.5 percent oil content, thus adding considerably to the profits of the operation. The crushing industry, composed of three large mills at Dakar, one at Port Lyndiane near Kaolack, and three or four small mills,

TABLE 5.--Senegal, French West Africa: Production of peanuts (unshelled) by area, 1957-58

Area	Acreage planted	Average yield per acre	Production	Local consumption	Prices paid to producers
	Acres	*Pounds*	*Tons*	*Tons*	*U.S. cents per pound*
Kaolack	1,062,530	892	473,989	38,581	4.10--4.58
Tambacounda	59,304	981	29,101	2,866	3.83--4.26
Bakel	13,590	803	5,456	992	3.83--4.05
Kodougou	7,413	654	2,425	2,535	3.80
Thies	311,346	803	125,001	14,330	4.32--4.64
Diourbel	276,752	892	123,458	12,125	4.32--4.54
Louga	227,332	758	86,200	8,488	4.27--4.48
Linguere	37,065	666	12,346	992	4.10--4.32
Bas-Senegal	16,556	446	3,693	551	4.27--4.32
Podor	741	298	110	110	---
Matam	4,942	446	1,102	551	---
Dakar-Rufisque	12,355	357	2,205	551	4.64--4.69
Ziguinchor (Casamance)	256,984	987	126,764	17,637	3.83--4.43
Total	2,286,910	867	991,850	100,309	---
Total 1956-57	1,927,380	873	841,055	---	---

Territoire du Senegal, Ministere de l'Economie Rural Service de l'Agriculture, Rapport de Synthese.

was primarily established on a large scale basis as a result of the economic developments of World War II. There were, however, six small mills crushing peanuts in Senegal prior to the war. After the fall of France, as fats and oils became scarce, the French Government directed the expansion of peanut crushing capacity in Senegal.

Crushing costs in Senegal are estimated at between $8.90 and $10.90 per short ton (unshelled), which compares with between $12.00 and $15.00 per ton on the equivalent basis in the United States. This cost reflects low fuel and labor costs. However, investment, salary, and other costs are high, although, the location of Senegal as a crushing center has several important economic advantages. Primarily both oil and cake can be shipped directly to diverse African and European markets or to Metropolitan France in the form of bulk products. Thus, instead of oilseeds being crushed in France and cake and oil being shipped separately to consuming centers, these products are shipped directly to the consuming country.

A peanut-crushing industry, established recently in the French Niger, is producing some peanut oil for local needs, and also a larger volume of both oil and meal for export. The industry originally consisted of two small screw-press mills that crushed around 25 tons of peanuts per day. These mills used antiquated methods and comparatively large labor forces to handle materials in the operation. A new mill that will crush between 35 and 45 tons of peanuts a day has recently been constructed at Magaria. The other two mills, located at Maradi and Matameye, have been rebuilt and the industry, which processed only 5,000 short tons of oil in 1957-58, is expected to produce close to 7,000 tons in 1958-59 and about 10,000 tons in 1959-60, when crushing capacity will be about 110 tons per day. Modern duplex screw-presses have been installed in the mills, but the old-type screw-presses have also been retained.

The introduction of solvent-extraction systems and other modern crushing equipment in Senegal has been encouraged by an adequate labor supply, low wages, and reliable and plentiful supplies of peanuts. Compared with Metropolitan France, labor costs are low in Senegal. Labor cost at Dakar are based on wages of about $1.30 minimum

TABLE 6.--Senegal: Costs and charges used to fix peanut prices to producers, Dakar marketing area, marketing years 1957-58 and 1958-59

Item	Price
	U.S. dollars
Price of 1 metric ton, shelled, c.i.f. Metropolitan France	[1] 201.00
Less costs from Dakar to Metropolitan France:	
Ocean freight	10.61
Insurance 0.5 percent c.i.f.	1.01
Shifting cargo in hold	.82
Surveillance and miscellaneous	.51
Brokerage 0.5 percent c.i.f.	1.01
General cost, Europe, 5 percent c.i.f.	1.01
Analysis	1.01
Loss en route 0.75 f.o.b. and insurance	1.38
Interest 0.25 percent f.o.b. and insurance	.46
Total	17.80
Price f.o.b. Dakar	183.21
Less costs to port, Dakar:	
Export tax (12 percent of dollar value)	17.63
Tax of condition (0.5 percent of dollar value)	2.20
Tax of transaction (5.4 percent of dollar value)	8.24
Statistics	.04
Land maintenance	1.02
Local budget	1.02
SIOFA[2]	2.04
Total	32.20
Price at port, Dakar	[3] 151.01
Less costs from warehouse, Dakar:	
Loss in transit	4.17
Port tax	.24
Amortization of bags	1.43
General cost, African	6.94
African loss 0.50 percent shelled	.69
Total	13.47
Price in warehouse, shelled, Dakar	137.54
Less costs from Dakar marketing area:	
Yield of shelled nuts (72 percent)	38.51
Shelling and management	4.08
Amortization of cartage bags	2.04
Fire insurance	.16
Interest 6 percent - 4 months 2 percent	1.82
Total	46.61
Less middlemen's commission	6.12
Total	52.73
Basic producers' price 1 metric ton unshelled, Dakar marketing area	84.81

[1] 492 Metropolitan francs = $1.00.
[2] Société Interprofessionelle des Oléagineux Fluides Alimentaires.
[3] 246 French West African francs = $1.00.

Ministry of General Economy, Dakar, Senegal.

TABLE 7.--French West Africa: Average price paid to farmers for peanuts, shelled and unshelled, by territory, 1957-58[1]

Territory	Unshelled	Shelled
	Cents per pound	*Cents per pound*
Senegal	4.4	6.3
Niger	3.2	4.6
Sudan	3.2	4.9
Dahomey	4.2	5.8
Upper Volta	3.8	5.3
Guinea	3.2	4.6

[1] Converted on basis of 210 West African francs to a dollar.

High Commission, Dakar, Senegal.

per day plus other benefits. In Northern Nigeria's Kano crushing plants, labor cost is even less, with wages for labor at around $0.50 per day. On the other hand, European trained specialists (mechanics, chemists, engineers, etc.), have to be given special salary incentives to come to Africa. Another advantage of crushing in the Senegal area is the ability of the mills to produce a high-quality peanut oil with a very low free fatty acid content. Also, the oil can be transported in bulk, an economical form of transport, made possible by the integration of Dakar crushers with Metropolitan France processors of fats and oils, who provide tanker transport.

PEANUTS AND PEANUT PRODUCTS IN NIGERIA

Production

The sandy soils of northern Nigeria are well suited to production of peanuts for crushing; the acreage devoted to this crop has nearly doubled since the war. Here peanuts are the main cash crop, with some cotton being grown on the adjacent heavier soils. Peanuts and peanut products account for over 20 percent of the value of Nigeria's total exports. While the government desires to maintain an optimum balance between food and export crops, the economic activity of the Kano area is closely related to the rate of increase in the production of peanuts for export. The foreign exchange used to buy consumer goods is obtained from peanut sales. Moreover, a desire on the part of business to expand sales has resulted in pressures on Nigerian farmers to expand production, and because of credit commitments, farmers need to increase cash sales.

The average rainfall at Kano is around 35 inches, while at the southern edge of the peanut area at Zaria the average rainfall is around 44 inches. However, the rainfall shows considerable variation both through the season and from season to season, and near Kano seasonal variation has been as much as 23 inches (20 inches 1949-50 to 43 inches 1954-55). Likewise, crop yields per acre have also shown a corresponding variation. Average yields in 1957-58 were 839 pounds of peanuts per acre, compared with 411 pounds in 1956-57.

The small farm units in the Kano area average 4 to 5 acres. Land is kept in continual production by rotating peanuts with sorghum (guinea corn) and millet. Fertility is maintained by use of communal grazing, farm manure, household refuse and night soil, and some commercial fertilizer.

Most of the peanut crop in the Kano close-farmed area is interplanted with food crops, but further away from Kano only about half of the crop is interplanted (estimated at about 75 percent over the total area). North of Kano much of the peanut crop is self-sown and is sometimes killed as a result of early rains.

These practices influence the size of the peanut crop. Mixed crop yields are low, averaging only 576 pounds in 1957-58 and 302 pounds in 1956-57. Higher yields of peanuts in Northern Nigeria are possible, and programs to encourage farmers to use proper rotation and improved seed, fungicide for treatment of seed, and superphosphate fertilizer are directed to this

TABLE 8.--French West Africa: Estimated peanut crushing capacity, by mills and area, 1958-59 and estimated crush 1957-58 (unshelled basis)

Name and location	Type	Estimated capacity	Est. crush 1957-58
Senegal:			
Large mills:		*Short tons*	*Short tons*
Lesieur-Afriqui, Dakar.....	Pre-press, continuous solvent extraction.	110,000	100,000
V Q Peterson et Cie., Dakar....	Screw-press.....	110,000	95,000
SODEO, Dakar.....	Pre-press, continuous and batch solvent extraction.	110,000	100,000
SODEC, Port Lyndiane[1].....	Pre-presses, batch solvent; installing new continuous solvent extraction plant.	130,000	95,000-100,000
Small mills:			
Louga.....	Screw-press.....	90,000	45,000
Diourbel.....	Screw-press.....		
Rufisque.....	Screw-press.....		
Zinguinchor.....	Pre-press--solvent.....		
Total.....	.....	550,000	440,000
French Niger:			
Maradi[1].....	Screw-press.....	10,000	([2])
Matameye[1].....	Screw-press.....	10,000	([2])
Magaria (new mill).....	Screw-press.....	11,000	([2])
Total.....	.....	31,000	--
Grand total (unshelled basis)	.....	581,000	--

[1] These crushing mills are all being re-equipped.
[2] Not available.

end. Ridging, which was introduced in the 1930's, has helped to increase yields. In place of irregular planting with one seed at each step, farmers are encouraged to plant on ridges, spaced at $2\frac{1}{2}$ feet with two seeds to each hole, placed 9 inches apart.

Estimates show that the amount of food crops or staples produced in the Kano area and in Sokoto province is only adequate to feed the present population. As the non-agricultural population increases, either increased imports or reductions in peanut production will be necessary. However, the present project now under way to build a railway into Bauchi and Bornu provinces, where a surplus of food and other agricultural produce is available, will transport additional food for increases in the non-agricultural population. As a result of increased marketing facilities afforded by this railroad, farmers will probably plant more peanuts and cotton.

Research

Important oilseeds research and development work in Nigeria is carried on by the Northern Region Government, Ministry of Agriculture, at the Samaru Regional Experiment Station at Zaria, at the Groundnut Breeding Substations at Kano, and at other towns.

Cultural practices at Samaru favoring ridge planting and proper spacing showed significant results. Proper fertilizing practices and variety selection have also been

TABLE 9.--Nigeria, Northern Region: Estimates of peanut acreage, yields, and production as percentage of total by areas, crop year beginning September 1956 and 1957[1]

Area	Estimated acreage	Yield per acre		Production	
		1956	1957	1956	1957
SOLE CROP	*1,000 acres*	*Pounds*	*Pounds*	*Percent*	*Percent*
Kano I.....	148.5	368	895	21.6	25.2
Kano II.....	55.3	[2] 300	670		
Katsina.....	81.7	429	986	10.6	11.9
Sokoto I.....	29.3	350	669	10.0	11.3
Sokoto II.....	68.1	297	758		
Sokoto III.....	6.6	385	794		
Bauchi I.....	72.4	691	789	21.7	16.0
Bauchi II.....	67.8	319	749		
Bornu I.....	213.3	421	885	36.1	35.6
Bornu II.....	61.3	477	829		
Total.....	804.3	411	839	100.0	100.0
MIXED CROP					
Kano I.....	194.6	338	667	65.4	71.2
Kano II.....	402.5	245	526		
Katsina.....	132.4	[2] 413	600	21.8	16.6
Sokoto I.....	24.8	497	810	6.3	5.4
Sokoto II.....	1.6	[2] 297	577		
Sokoto III.....	5.8	518	821		
Bauchi I.....	8.0	[2] 428	487	2.5	2.3
Bauchi II.....	13.8	[2] 200	[2] 500		
Bornu I.....	9.7	[2] 200	470	4.0	4.5
Bornu II.....	38.8	207	433		
Total.....	832.0	302	576	100.0	100.0

[1] The small Niger peanut crop is excluded from this table. Acreage in Kano, Katsina, and Sokoto provinces are underestimated.
[2] Inadequate coverage.

Department of Statistics, Northern Regional Government, Kaduna, Nigeria.

worked out. Improved variety selection and multiplication programs in progress will aid in improving average yields. A variety well suited to the Kano area and a spreading variety for the Zaria area have been promising, but more work is needed to provide widespread multiplication of seed. Research is needed to find varieties resistant to Rosette--the virus disease which causes widespread loss in the southern part of the peanut area. Lack of funds and personnel have seriously limited effective research in Nigeria, as in most of West Africa; but as the funds are made available the research staffs are built up and an expanded research program is now guaranteed.

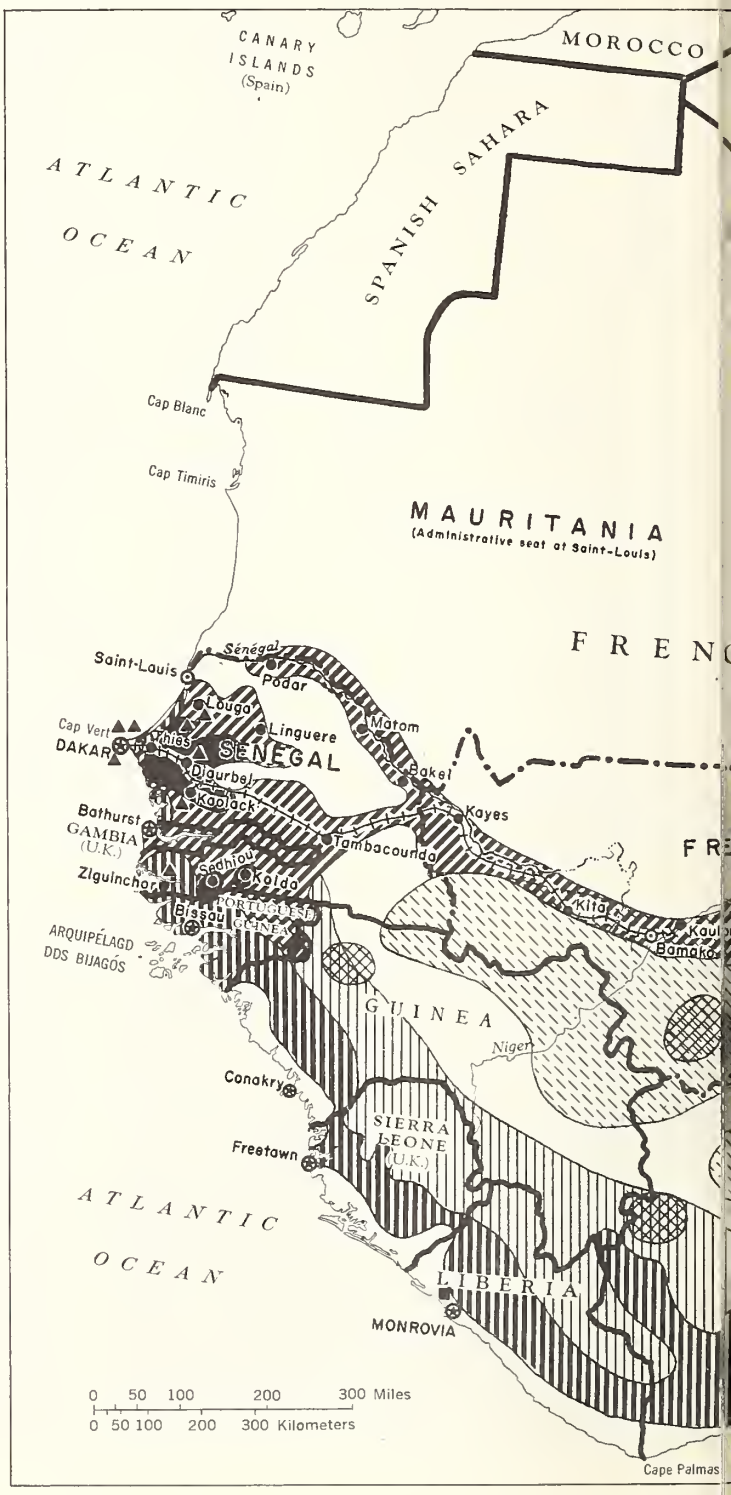
Fertilizer trials have been an important means of showing farmers the results of better practices. Fertilized peanuts are able to respond much more favorably to a good season. Applications of night soil, compost, and farmyard manure on peanuts indicate that these fertilizers produced significant effects on the yields as well as residual effects on the next year's crop.

The volume of fertilizer used, including commercial types, has been increasing in Northern Nigeria, and each year well over 15,000 bags of superphosphate for peanuts, plus some sulfate of ammonia for other crops, are sold to farmers. Subsidies have been used to encourage distribution, and the total volume for the period April 1953

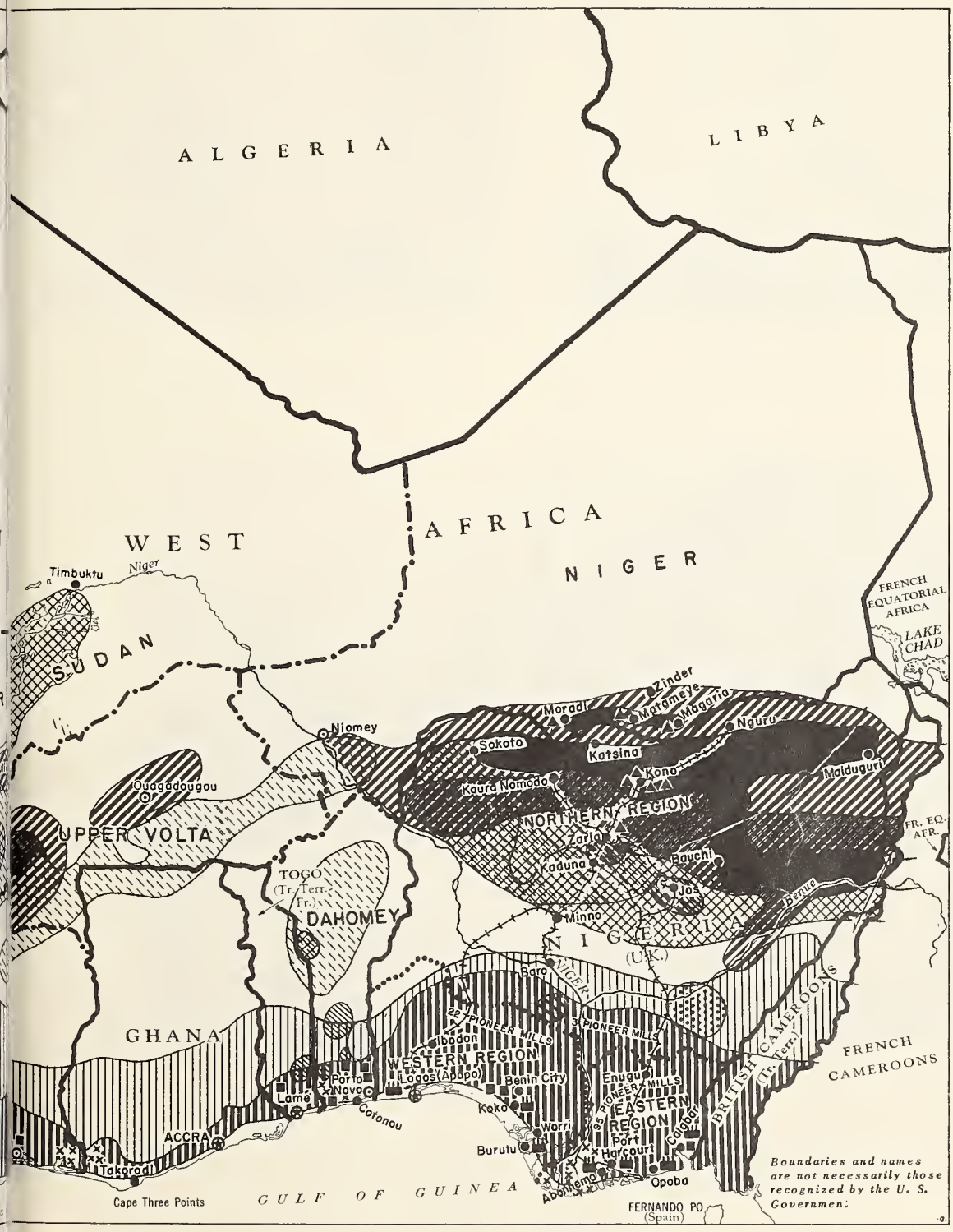
WEST AFRICA, OILSEEDS, PALM PR
PRODUC

LEGEND

- International or intercolonial boundary
- Internal administrative boundary
- Regional boundary
- National or colonial capital
- Internal administrative capital
- Other cities or towns
- Selected railroads
- Rivers
- Peanut oil mill
- Palm oil mill
- Palm oil bulking plant
- Copra
- Shea nut
- Castor beans
- Peanuts — Heavy production
- Cotton
- Palm products — Heavy production
- Soybeans
- Soybeans & Sesame



CTS AND OIL BEARING MATERIALS,
N AREAS



WEST AFRICA, OILSEEDS, PALM PRODUCTS AND OIL BEARING MATERIALS, PRODUCTION AREAS

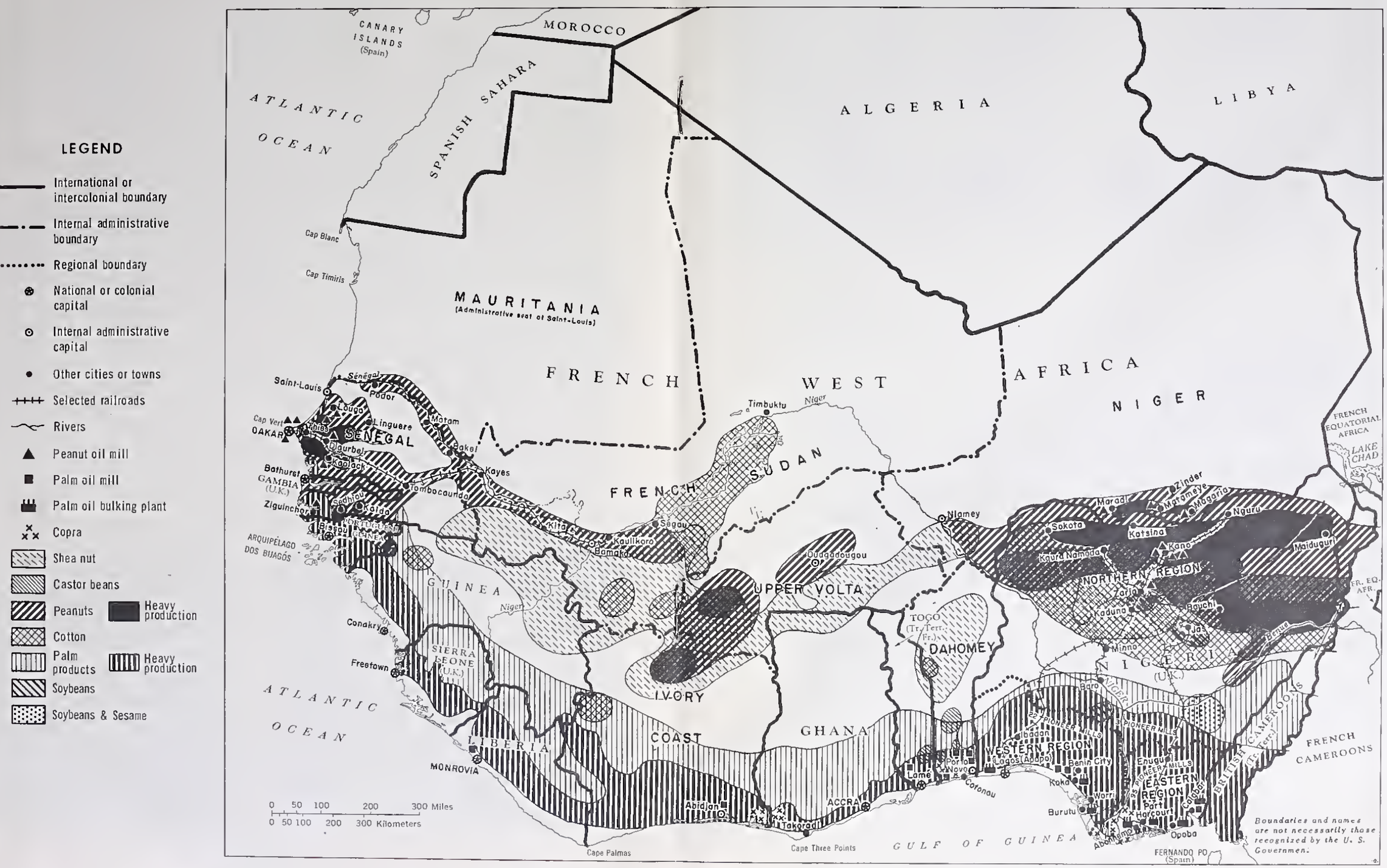


TABLE 10.--Nigeria: Average monthly rainfall at selected centers

(inches)

Center	Years of record	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Number	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*	*Avg.*
Benin.....	44	0.76	1.25	3.63	6.62	8.17	12.04	12.28	8.07	11.94	9.45	2.98	0.58	77.77
Enugu.....	33	.75	1.05	2.62	5.93	10.36	11.36	7.61	6.69	12.76	9.79	2.07	.54	71.53
Ibadan.....	46	.38	.88	3.49	5.49	5.88	7.46	6.31	3.38	7.00	6.12	1.65	.38	48.42
Jos.....	29	.11	.11	1.04	3.49	7.86	9.09	12.95	11.58	8.42	1.60	.12	.08	56.44
Zaria.....	34	.00	.06	.40	1.28	5.40	6.30	8.90	11.79	8.85	1.52	.05	.00	44.55
Kano.....	46	.00	.01	.07	.37	2.55	4.45	7.99	12.45	4.96	.48	.00	.00	33.33
Sokoto.....	35	.00	.00	.03	.42	1.97	3.52	5.84	9.31	5.73	.51	.00	.00	27.33
Maiduguri.....	34	.02	.01	.01	.26	1.58	2.69	6.93	8.80	4.07	.77	.01	.00	25.15
Nguru.....	12	.00	.00	.00	.09	1.11	2.07	4.99	8.93	4.41	.22	.00	.00	21.83

Meteorological Services Headquarters, Lagos, The Economic Development of Nigeria.
International Bank for Reconstruction and Development, and Samaru Regional Experiment Station, Zaria, Nigeria.

Picking peanuts is a family affair in Nigeria, where this is the farmers' main cash crop.

Peanuts are shipped to Europe for crushing. They account for a fifth of Nigeria's total exports.

Export peanuts are weighed, sampled, and bagged at licensed buying stations.

to December 1956 was over 55,000 bags (40 pounds each).

Marketing and Exports

Peanut marketing in Nigeria is facilitated through the monopoly of the Northern Regional Marketing Board and its executive organization, the Department of Marketing and Exports of the Federal Government. The Eastern Region also has a peanut purchase scheme, but purchases are insignificant. The Regional Marketing Boards in Nigeria are the successors of the commodity marketing boards which carried on their function for palm products, peanuts, cacao, etc., on a national basis prior to 1954. The Northern Regional Marketing Board develops a purchase program prior to each marketing season; in it the price to be paid to producers at each point is set out, as well as the location of the "gazetted" buying stations in the various provinces, where these prices are paid.

Also, grades and standards of shelled peanuts to be marketed are defined as prescribed for all exported produce by the Federal Minister of Commerce and Industries. During the past four seasons a new Special Grade with 70 percent by weight of whole nuts was purchased along with Standard Grade peanuts containing less than 70 percent of whole nuts but not less than 30 percent. All grades purchased must be of exportable quality and contain not more than 0.2 percent of stones, laterite, and other mineral matter, and not more than 1 percent of total impurities. Peanuts containing excess foreign material and less than 30 percent whole nuts are turned back to the producers for recleaning.

The buying season is set by the Board and both opening and closing dates are set separately, with some local variations to meet local conditions.

Buying agents representing local or national trading firms or companies or independent business men, licensed by the Board, do the actual purchasing. During the 1958-59 season, 27 licensed buying agents acted for the Board in carrying out the peanut program. Farmers or middlemen bring peanuts into a local buying station where representatives of several licensed buying agents have an established stall or store. Often they deliver their peanuts to an agent or local buyer, who receives a commission from the agent and who has previously advanced cash, consumer goods, or even bags, to them. The buying agents purchase small lots for cash at the established minimum price and provide well-marked bags, weighing equipment, and often the labor for shelling, preliminary inspection, and sacking to standard weights of 189 pounds gross. They also arrange for government inspection at gazetted stations. Government inspectors classify each bag or lot after careful inspection, and mark Special Grade peanuts with a special seal.

Buying agents take complete charge of all storage, transportation, and handling of peanuts for their own accounts until the peanuts are delivered at port or to Kano crushers. However, they are partially reimbursed prior to delivery of the nuts to storage, to offset the heavy financing and marketing charges. This reimbursement is based upon reports of purchases at gazetted buying stations. The agents' storage charges include pyramid costs, involving cost of base, stacking, and protection by tarpaulins. Covered storage is used by only a few agents. Insect and rodent control is maintained by the Insect Control Division of the Ministry of Agriculture.

One of the impressive sights of the Nigerian peanut production area is the extensive number of pyramids at Kano. These contain between 800 and 900 tons (8,650-9,730 bags of 185 pounds net) of peanuts and are an inexpensive and efficient form of storage. The labor cost of building an 850-ton pyramid averages about $171.00 or 20 cents a short ton, and unstacking the pyramid, including the cost to load railway cars, is roughly $171.00, or 40 cents a ton in and out of storage. This does not include cost of base rental or protection. These costs, including all losses, have been estimated as about equal to stacking costs (which would increase total costs to about 80 cents per ton, or 13 cents a ton per month for an average 6-months' storage). Although insect, rodent, and weather damage could be costly, effective control of these factors has reduced losses, and total costs during the long dry season (October-March) are practically nil. During the rainy season (April-September) costs of storage include cost of tarpaulins and added control measures. Storing in this manner is far less costly than storing at mill points. The inadequate capacity of the Nigerian Railway considerably limits the movement of peanuts from Northern Nigeria to port areas. Shipping capacity has nearly reached a 50,000-ton-per-month level, as a result of the purchase of new diesel locomotives, but

Bagged peanuts ready for export are stored in the open in giant pyramids and covered with tarpaulins.

this is still relatively low capacity and the need for storage on even a 500,000-ton crop is evident. Approximately 70,000 tons of bagged French Niger peanuts are also moved to port each year by this railroad. Slightly less than two-thirds of the Nigerian peanut marketings are transported by rail to the Port of Apapa at Lagos, and nearly one-third to Port Harcourt. Of the remainder, about 70,000 tons are now being sent to Baro for water transport to several small (Warri and Buruto) ports. Trucking from production areas to port is also becoming a familiar practice.

At port, the peanuts are stored in transit sheds if necessary before being shipped. At this point, they are taken over by the Marketing Boards and exported by the Nigerian Produce Marketing Company, Ltd., the exporting agent for all oilseeds and palm produce. Licensed buying agents are paid the final reimbursement for their services, which includes a buying allowance based on average cost and profits. This allowance, which was $14.00 per ton for Special Grade peanuts in 1958-59, included remuneration for bags, insurance, financing charges, interest, middlemen's commission, and overhead.

The cost of peanut price stabilization programs in 1957-58 and 1958-59 has been estimated at nearly $28 million, with a $16.8-million cost in the 1957-58 season alone. However, with rising prices of peanuts in world markets in early 1959, 1958-59 losses may be overestimated.

Marketing peanuts as Special Grade means that Nigerian peanuts will reach world markets with a very high percentage of whole nuts, and consequently a much lower free fatty acid content than Standard Grade. Thus a higher price is received from marketings, since the standard British contract provides for sale of Nigerian peanuts on a free fatty acid content. A 3 percent f.f.a. is the contract basis, with

premiums and discounts for variations below or above, respectively. The economies of this premium have not been estimated, but crushers were eager to report improved quality and quantity of oil produced from Nigerian Special Grade peanuts.

Prices

Peanut price policy is formulated by the Northern Regional Marketing Board. World prices of peanuts in the free market, compared with total product prices, have been relatively higher in the postwar period than during the war and the prewar period, although meal prices have been higher relative to oils. As a result, narrow crushing margins have existed, and in the long run, the policy of exporting peanuts and palm kernels has been profitable to Nigeria. This competitive advantage will probably continue, since importing countries still prefer to import oilseeds in order to keep their domestic crushing operations employed at a high percentage of capacity. The demand for crushing materials will no doubt continue and, as population increases, the domestic demand for fats and oils will spur increased production of oilseeds (including palm kernels). Most importing countries have adopted tariff measures giving preference to oilseeds and oil-bearing materials.

Stabilized producer prices for peanuts in Nigeria were well above world prices in the 1957-58 and 1958-59 seasons, and cash surpluses or reserves accumulated by the Board's programs without government aid in former years have been reduced. Contributions to technical, economic and other developments have also made use of the Board's surplus funds. Producer prices for peanuts in the Northern Region, where nearly 100 percent of the crop is grown, are set by the Board each season prior to the declared marketing date. The prices paid producers are based on the bulk weighted port price for shelled peanuts, less transportation costs, and prices to be paid each season at the various gazetted buying stations by the licensed buying agents are well known to the producers. A grower sales tax (amounting to $2.80 a ton), a regional sales tax, and an export duty are levied on peanuts.

Responses to price incentives offered by the Board to improve the quality of peanuts purchased in the area have been remarkable. The original price incentive for Special Grade peanuts of $4.20 per long ton over Standard Grade was raised to $9.80 in 1956-57 and to $14.00 in 1957-58. As a result, the traditional mortar and pestle methods of shelling peanuts have been discarded in the Kano area, and hand-operated machines are now being used almost exclusively for shelling peanuts on farms. The percentage of peanuts purchased as Special Grade (containing not less than 70 percent by weight of whole nuts) increased from 2 percent in 1955-56 to over 40 percent in 1956-57, nearly 98 percent in 1957-58, and even higher in 1958-59. The improvement in quality also was facilitated by the low cost of the machines, which sell for about $36.40 to $42.00.

Crushing

The peanut-crushing industry in Nigeria is located at Kano, in the heart of the peanut production area. Four screw-press mills make up the industry, with a present

TABLE 11.--Nigeria: Prices paid farmers for a bulk ton of shelled peanuts at Kano

Year	Price	Year	Price
	Dollars per short ton		*Dollars per short ton*
Basic price:		Basic price--continued	
1949-50	53.00	1957-58	83.75
1950-51	53.00	1958-59	74.88
1951-52	90.00	1959-60	[1] 67.38
1952-53	90.00	Incentive price for Special Grade:	*Dollars per short ton*
1953-54	90.00	1955-56	3.75
1954-55	91.25	1956-57	8.75
1955-56	91.00	1957-58	8.75
1956-57	83.75	1958-59	12.50

[1] Estimated.

crushing capacity of from 430 to 500 short tons per day, or 130,000 to 145,000 tons of shelled peanuts a year. One of the mills recently has been completely rebuilt and a second mill is now being re-equipped. Estimated crushing capacity will be about 550 tons per day in the fall of 1959, or an annual capacity of 173,000 tons. However, at the present time only 117,600 short tons of peanuts each season are allocated by the Northern Regional Marketing Board for crushing, and several of the mills operate at only about 65 percent capacity. Peanut crushings in the 1955-56--1958-59 marketing seasons were as follows:

	Tons
1955-56	89,024
1956-57	95,980
1957-58	112,000
1958-59[1]	117,600

[1]Estimate.

Since the 1955-56 season, crushers have purchased peanuts directly from the Board on a bid basis. Prices are announced by the Board twice weekly and are based on a world market price (c.i.f. Western Europe) equated back to a Kano spot price by deducting costs, such as railway freight charges, ocean freight, marine insurance, and export duty. Also, an allowance is provided for adjustment in free fatty acid on a world market basis. Crushers sell some peanut oil and cake in Nigeria and the balance in the overseas market. One crusher has a small peanut flour mill in operation for utilization of peanut cake, another maintains an extensive hog farm where cake is utilized in mixed feed.

The program of the Northern Regional Marketing Board in allocating peanuts to the crushers has been rather liberal in view of the adopted policy of the Council of Ministers and Board to wish Nigeria to remain a large-scale exporter of oilseeds. However, in view of the level of domestic consumption, unless the present established quotas are liberalized, the Kano crushers will continue to operate at only 65 percent capacity. The problem of the Marketing Board is indeed difficult.

The cost of crushing peanuts has averaged around $11.50 per ton in past seasons. However, for the small crushers, the cost may now be lower than this. The larger crushers report cost well above this figure at around $14.00 per ton.

Cost of unskilled labor is 49 cents per day, which is relatively low compared with labor costs in Dakar, Senegal. The Kano peanut crushing mills use manual labor extensively, particularly in handling materials, but labor is not a large item in total costs. The use of modern screw-press machinery does not prevent the extensive use of hand labor in place of screw conveyors for moving peanuts and peanut products. In several mills peanut cake is shoveled and bagged as it falls on the crushing-room floor, directly from the screw-presses.

Other costs, such as maintenance and repairs, interest on loans, salaries of executives and trained mechanics, fuel and electric power, and insurance are all high in this remote area.

Kano crushing mills have been able to operate profitably in recent years, aided by sales programs and marketing allowances provided by the NRMB. Increase in the percentage of Special Grade peanuts crushed has enabled Kano mills to produce a better quality of crude oil with a lower

TABLE 12.--Estimated crushing capacity of Kano peanut oil mills (shelled basis)

Mills	Quota	1959 Capacity	Capacity per day	
			1957-58	1959-60
	Tons	*Tons*	*Tons*	*Tons*
Nigerian oil mills, Ltd.	33,600	50,000	110	165
P. S. Mandrides & Co., Ltd.	28,000	45,000	145	145
Kano Oil Millers, Ltd.	28,000	50,000	90	(New mill est. 150-165)
K. Maroun, Ltd.	28,000	28,000	85	90
Total	117,600	173,000	430	550

This English-made screw press for extracting oil from peanuts is typical of those in oil plants in Nigeria.

The old method for shelling peanuts in French West Africa was with a mortar and pestle.

This newer mechanical sheller is an innovation in West Africa's peanut industry.

free fatty acid content than formerly. When crushers bid for peanuts at the Kano equated world prices--at which the Board offers them--they often have been able to profit by simultaneously selling products (oil and cake) for future delivery, because the world market price may rise during the bidding period. In declining markets, however, they have often remained out of the market for peanuts and no bids have been placed with the Board.

Processing losses at the Kano screw-press mills (primarily from oil left in the cake) are fairly high, running from 4.5 to 5.5 percent in the more efficient mills to as high as 7 and 8 percent in the other mills. The cost of processing, which includes the cost of actually selling oil at cake prices, is one great disadvantage of the Kano mills, compared with the modern screw-press solvent-extraction mills at Dakar. Cost of shipping peanut oil and meal over the long rail-to-port routes is also high, but compensated for by lower peanut prices. Other costs chargeable to peanut crushing costs now include operation of bulk oil installations and storage for peanut cake at the port of Lagos. Other operations which add to the total costs of the Kano crushing mills are the usual packaging costs of drumming oil and sacking meal; however, some oil does move to port in tank cars, which reduces this cost. Two extra handlings are necessary to export Kano-produced products, as compared with those produced at Senegal in a mill located at port with pumping and loading facilities.

The Northern Oilseed Processing Development is installing a peanut flour mill at Zaria, to produce flour for domestic consumption for the purpose of improving the low protein content of the African diet. The Nigerian Oil Mill in Kano has a small peanut flour mill in operation and has been able to market the product locally. Many of the technical problems of production have been solved and a uniform product is produced.

OTHER PEANUT AREAS

Gambia

Peanuts are of great economic importance in Gambia, where they have represented about 95 percent of total exports. Production is expanding. The Gambia Oilseeds Marketing Board purchased 107,846 short tons of peanuts during the 1957-58 marketing season (November 1957-March 1958). However, about 22,000 tons were received from adjacent French areas. Gambia's total output in 1958-59 was expected to be about 100,000 tons, a significant increase over the 56,000 tons grown in 1952.

Peanut prices in Gambia are set by the Marketing Board; attention must be paid adjacent French areas to prevent movement of peanuts in or out of Gambia as prices change. Prices are generally adjusted in line with world prices, as price stabilizing reserve funds are small. Producer prices were $67.50 per short ton in 1957-58, and the loss per ton was $5.00 with a total loss of $539,230.

Peanuts are purchased unshelled, for transportation routes are comparatively short. Around 2,000 tons of peanuts are crushed for local use each season. A specific export duty favoring peanuts in the shell is placed on exports. Italy, the United Kingdom, and the Netherlands are the principal markets.

Portuguese Guinea

Peanuts grown in Portuguese Guinea represent nearly 60 percent of the value of total exports. They are exported to Portugal (over 41,000 tons in 1958) under a guaranteed market plan that fixes prices.

TABLE 13.--Gambia: Peanuts (unshelled), purchases by Gambia Oilseeds Marketing Board, 1949-50 to 1957-58

Year	Amount	Year	Amount
	Short tons		*Short tons*
1949-50	68,882	1954-55	64,954
1950-51	72,608	1955-56	61,492
1951-52	75,242	1956-57	86,684
1952-53	55,931	1957-58	107,846
1953-54	62,611		

Actual purchase prices paid to growers for peanuts are fixed by the Governor after consultation with the agricultural officials and vary with distance from the main market centers. Dealers buy the nuts and receive a fixed commission upon sale to exporters. Export quotas to Portugal have priority on peanuts purchased by export firms.

Exports of peanuts to Portugal amounted to 39,407 short tons in 1957 and 41,025 tons the first 11 months of 1958, compared with 40,689 tons in 1956. Total exports in 1957-58 were around 46,000 tons unshelled. Domestic consumption in 1957 was estimated at around 20,000 tons or 30 percent of production. Peanuts also moved into Portuguese Guinea from French West Africa in 1957 and 1958.

Production is expected to increase as much as 20 percent in the next 5 years because of the introduction of selected seed from Bambey Research Station, Senegal. Also, introduction of better cultural and soil fertility practices will aid in increasing output. Seed warehouses have been built and the government is supervising the seed multiplication and distribution program. A research station has been set up to study peanut plant breeding, soil fertility, and cultural methods.

PALM PRODUCTS IN WEST AFRICA

Introduction

The oil palm, botanically known as Elaeis guineensis (Jacq.) is the world's most efficient producer of vegetable oils and is widely distributed in the forested coastal areas of West Africa, extending up to 150 miles or more inland. From the oil palm two important vegetable oils of commerce are obtained: (1) Palm oil, a soft oil formerly used mainly in the manufacture of soap and tinning of sheet steel and metal working, but now used extensively in margarine, shortening, and other edible products; and (2) palm kernel oil, high in lauric acid, which produces excellent lathering soaps, and is used mainly for making soap, margarine, shortening, and recently, fatty acids for detergents. The many new uses developed in recent years for these oils have increased the demand for them to the extent that their reduced use in soap has been more than offset.

Oil palms grow in abundance in the Eastern Region of Nigeria, "The Oil Palm Belt," extending across the delta of the Niger River. They are self-sown and in a semi-wild state, frequently occurring in dense groves, with a hundred or more palms to the acre. In Western Nigeria, Ghana, the Ivory Coast, Togo, Dahomey, Liberia, Guinea, and other countries of West Africa, palm trees are generally well spread over the forested areas. Only a few large oil palm plantations, such as are found in the Belgian Congo, have been established in West Africa, and the bulk of the valuable oil palm crop is processed from fruit harvested from trees that are found growing wild. These trees, however, are associated more with man and subsistence food crops than with the primeval forest.

The valuable fruit is gathered in bunches or "bangers" which grow in the leaf axils and are well clustered together, protected by spines. They are harvested throughout the year, the peak of production coming at the beginning of the rains in April and May and the low production in December and January. Palm oil is obtained from the outer oily, fleshy pulp or mesocarp of the fruit; there can be as many as 1,400 to 1,500 individual fruits per bunch. The nut of the fruit contains a kernel which, when crushed, produces the palm kernel oil of commerce.

The percentage of the fruit that is made up of mesocarp, shell, and kernel varies considerably, and the common palm in West Africa is the thick-shelled and thin-mesocarp dura form which produces relatively large numbers of kernels (around 5 percent of fruit bunches) and a relatively low amount of palm oil (13 to 18 percent of fruit bunches). Some palms, particularly in Eastern Nigeria, however, have a fairly thick mesocarp and yield more palm oil. A less common form is the thin-shelled and thick mesocarp tenera which yields more palm oil and less kernels.

Palm oil is an important food crop in West Africa. Local consumption is gaining as the population increases. The oil is rich in vitamin A and as a vegetable oil contributes fat to the African diet.

The total volume of palm oil produced in most countries in West Africa is not known, but the greater part of the marketed palm oil is exported. The trend in Nigeria, on the other hand, is toward retaining an increasing amount for domestic use both for industrial and edible purposes.

Palm wine, also an important food, has a high dietetic value because of its vitamin content. It is obtained by tapping the oil palm tree, but very little is known about how

Nigeria is the world's largest producer of palm oil and palm kernel oil, and increasing numbers of oil palms are plantation-grown.

tapping the palms affects their ability to produce fruit bunches.

Production

Nigeria is the world's largest producer of palm oil and palm kernels; they account for around 25 percent of the value of the country's exports.[4] Production of both palm oil and palm kernels for export in Nigeria increased in 1958 over the previous marketing season (January-December). Nigeria's trend in palm products output has been upward since the end of World War II, and production now amounts to nearly one-third of world palm oil production and over two-thirds of palm kernels. Nigeria's percentage of world trade in palm products, however, has decreased since 1956. Palm oil purchases and exports have fallen since 1953-54, but still have remained far above prewar. Nevertheless, the long trend in production and commercial purchases appears to be upward.

The economy of the Eastern Region and to some extent that of the Western Region of Nigeria depends upon the oil palm industry. In the Eastern Region, palm oil is the most valuable product exported with palm kernels close behind, but in the Western Region palm kernels are far more important than palm oil as an export commodity. Together, palm oil and palm kernels are the most valuable exports, but cacao, produced mainly in the Western Region, is the most valuable single commodity exported. Fats, oils, and oilseeds accounted for about half of total exports from Nigeria.

Other countries of West Africa, including French West Africa (Dahomey, the Ivory Coast, Senegal), Gambia, Sierra Leone, Ghana, Guinea, Portuguese Guinea, and Liberia produce palm products, but only Portuguese Guinea, Ghana, Liberia, and Sierra Leone (all exporting palm kernels), and French West Africa (including Togo) produce any significant volume for export. The volume of production of palm kernels in French West Africa has been steady, averaging only slightly above prewar. The rate of production of commercial palm oil dropped during the war and did not reach prewar levels until 1958. Sierra Leone is a large producer of palm kernels for export, but all of the palm oil produced is consumed locally.

Cultivation and Research

West African growers usually place the responsibility for the success of their palm enterprises directly on Nature, in spite of the fact that the bulk of their cash income is derived from the sale of the fruit. In this area the oil palm has been little affected by weather and production has

[4] This percentage was formerly much higher, but the value of the exports of peanuts, peanut products, and cacao has increased greatly in recent years.

TABLE 14.--Nigeria: Purchases of oil palm products, palm oil by grade, and palm kernels, marketing year 1949-58[1]

Marketing year	Plantation palm oil	Special Grade[2]	Percent Special Grade	Technical palm oil[3]					Total	Total palm oil	Palm kernels
				I	II	III	IV	V			
	Tons	*Tons*	*Percent*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
1949	8,124	---	---	120,138	26,235	22,924	10,856	777	180,930	189,055	417,654
1950	9,464	385	0.2	108,910	31,633	25,591	10,307	888	177,330	187,179	426,640
1951	11,465	9,523	5.8	107,258	17,301	11,389	5,996	---	141,944	162,933	369,594
1952	13,195	59,238	27.8	112,661	14,756	10,279	3,025	---	140,721	213,154	462,310
1953	14,044	119,620	47.6	90,036	17,073	10,347	---	---	117,456	251,120	485,614
1954	12,992	139,428	57.5	68,573	10,166	11,264	---	---	90,004	242,423	517,887
1955	13,655	144,882	65.7	48,276	6,368	7,301	---	---	61,946	220,483	468,162
1956	13,449	144,548	67.6	44,167	5,152	6,371	---	---	55,690	213,687	521,530
1957 (by regions):											
Western	3,389	419	2.4	5,823	4,023	3,572	---	---	13,418	17,226	215,901
Eastern	2,574	131,189	76.2	38,224	88	13	---	---	38,326	172,089	225,804
Northern	---	541	33.3	1,625	---	---	---	---	1,625	2,166	14,575
Southern Cameroons	6,430	---	---	---	---	---	---	---	---	6,430	5,046
Total	12,393	132,149	66.8	45,672	4,111	3,585	---	---	53,369	197,911	461,326
1958	10,911	153,132	72.0	45,146	---	---	---	---	45,146	212,736	515,125

[1] 1949-54, purchases by Nigeria Oil Palm Produce Marketing Board; since that time purchases by Regional boards: Western Regional Marketing Board, Eastern Regional Marketing Board, and Northern Regional Marketing Board.

[2] Low acid oil, 4.5 percent f.f.a. - 1950-54, 3.5 percent f.f.a. 1955-58, maximum.

[3] Grade I, free fatty acid content more than 4.5 percent but not more than 9 percent; grade II, 9 percent to 18 percent; grade III, over 18 percent and including 30 percent; grade IV-V, over 30 percent (grades IV and V eliminated after close of 1950 and 1952 marketing years, respectively).

Department of Marketing and Exports, Lagos, Nigeria.

TABLE 15.--West Africa: Palm oil and palm kernels exports by country and world total, average 1935-39 and 1950-54, annual 1956-58

Country	Average 1935-39	Average 1950-54	1956	1957[1]	1958[1]
Palm oil:	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Nigeria	153,980	201,420	207,465	186,146	190,968
French West Africa	22,721	14,534	19,614	13,006	[2] 20,000
French Togo	1,864	614	2,094	958	[2] 1,000
Portuguese Guinea	845	873	678	696	515
Ghana	549	376	---	---	---
Liberia	[3] 1,318	1,904	1	72	1,558
Sierra Leone	1,943	1,623	15	12	---
Total West Africa	183,220	221,344	229,867	200,890	214,041
Total Africa	278,736	389,117	411,751	385,874	404,833
World total	538,740	581,454	615,324	595,513	639,457
West Africa's percent of world total	*Percent* 34.0	*Percent* 38.1	*Percent* 37.4	*Percent* 33.7	*Percent* 33.5
Palm kernels:	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Nigeria	[4] 369,293	447,645	505,198	454,942	494,170
French West Africa	85,312	86,147	95,234	86,846	108,520
French Togo	13,776	10,659	12,737	8,080	[2] 13,300
Portuguese Guinea	13,909	14,959	24,590	15,474	18,300
Ghana	7,987	6,442	12,914	7,787	8,902
Liberia	10,089	18,337	11,002	11,719	12,271
Sierra Leone	83,510	80,580	64,562	59,323	[2] 61,000
Gambia	777	1,859	2,017	1,184	[2] 2,000
Total West Africa	584,653	666,628	728,254	645,355	718,463
Total Africa	743,283	812,769	810,384	720,911	802,184
World total	795,549	865,697	869,991	783,563	865,989
West Africa's percent of world total	*Percent* 73.5	*Percent* 77.0	*Percent* 83.7	*Percent* 82.4	*Percent* 83.0

[1] Preliminary. [2] Estimate. [3] Average of less than 5 years. [4] Including British Cameroons.

continued through the years without significant change in volume. Efforts are now being made by the government, through methods like the research and extension work of the regional and territorial departments of agriculture, to educate African growers to the benefits of planting improved varieties and adopting scientific cultural practices. While many are responding, most producers still are not interested because of the long waiting period before fruit production commences (only 5 years with improved varieties), and concentrate on harvesting the wild fruits that grow in the "bush." The most effective method of increasing the production of palm products, however, is by establishing plantations where approximately 50 percent more oil can be produced per tree than can be obtained from the wild palmeries. Fruit can be harvested from the low-growing plantation palms at considerable savings

in labor. These improved palms start producing well while still at ground levels, compared with most native trees which mainly produce fruit at levels 30 to 40 feet or even higher from the ground. There are only a few scattered plantations in West Africa, several of which are located in French West Africa and Nigeria.

As land ownership is vested in tribal hands, statutory provisions as well as social and political conditions prevent development of large-scale private plantations, particularly in Nigeria. However, the Eastern Regional Government is developing two plantations there, and the United Africa Company also has two large plantations in Nigeria and one in the southern British Cameroons. Nigeria has 30,000 acres in plantations, of which 13,000 acres are managed by the United Africa Company and the balance by the Eastern Regional Development Corporation and the West African Institute for Oil Palm Research.

The soils of the West African palm region are very poor, lacking in mineral and plant nutrients, and are highly leached and acid, particularly where the rainfall is heavy. In Nigeria, soils in areas with rainfall over 80 or 90 inches are very high in acid. The oil palm is sensitive to drought and requires an annual rainfall of 50 to 60 inches and over, but heavy or swampy soils are not favorable for growth. Based upon research, plant production methods, selection, and planting techniques have been adopted which take into consideration the climate and needs for well-drained soils.

Yields of fruit in pounds per acre for plantation palms run from around 4,000 to 8,000 pounds each year, compared with 2,000 pounds in typical self-sown palm groves in Eastern Nigeria. The average recovery of products on a plantation from whole bunches or "bangers" in Nigeria is about 15 to 17 percent oil and 5 to 6 percent kernels. The oil-fruit ratio is about 25 to 27 percent and the kernels-fruit ratio about 10 percent.

Extraction rates on the self-sown palm fruit grown around Port Harcourt are considerably less than for fruit from plantation palms. Here the oil content is about 21 percent and the oil extracted is about 14 percent. Palm kernel content is about 11 percent and around 10.5 percent is recovered.

In Western Nigeria and Ghana, cacao competes with the oil palm for farm labor; moreover, it has provided farmers with higher returns. In some areas of the Western Region of Nigeria, oil palms furnish shade for cacao and a secondary income.

In Nigeria and Sierra Leone research is carried on by the West African Institute for Oil Palm Research. This institute has studied the problems of the oil palm. Its present goal is to improve growth and yield, to establish successful management practices, and to provide economical extraction techniques for palm products. Many subjects have been studied at WAIFOR. These include application of fertilizer and trace minerals, techniques for improving seed germination and transplanting of seedlings, plant selection and breeding, disease control, and improving cultural practices such as spacing of trees, intercropping, and maintaining soil fertility.

The work at this station on potassium and magnesium soil deficiencies in Nigeria should lead to improvement in oil palm yields. The selection and breeding program has taken into consideration the variation in the value of palm oil and palm kernels. Varieties selected have been palms that produce the highest total value of product.

In French West Africa, l'Institut de Recherches Pour les Huiles et Oléagineux (The Institute of Research for Oilseeds and Oil Bearing Materials, IRHO) has several research stations in Dahomey and the Ivory Coast where research on the oil palm is being carried on. Research on selection of the most productive varieties and improved cultural techniques is helping to increase production. Strains that produce exceptional yields compared with the self-sown palms have been developed. Considerable work has been done to improve natural self-sown palmeries. By clearing the undergrowth, thinning out bunched trees, pruning the dead leaves, and hoeing around the foot of the palm, production can be more than doubled. Application of these cultural practices should increase production of palm oil in West Africa.

Marketing and Exports

Palm oil and palm kernel sales for export provide the bulk of the income of the economy in Eastern Nigeria and Dahomey and agricultural income in Sierra Leone. Exports from West African countries (except Liberia, where output is small) always have had guaranteed markets in the United Kingdom, France, and Portugal. There may be some question about Nigerian palm products having such a market in the United

Kingdom at the present time, since government controls (long-term contracts) have been dropped. However, unusual business practices, including short-term bulk contract arrangements, indicate marketing advantages and colonial preference tariffs for Nigerian products.

A substantial volume of palm oil and palm wine is bought and consumed locally, and a large trade is carried on with the interior areas. Consumption of palm oil for soap processing in West Africa has expanded in recent years. Movement to soap plants of low-grade palm oil high in free fatty acids totaled around 11,000 tons in Nigeria in 1958. Shipments of palm oil to the Northern Region of Nigeria from the Eastern Region totaled over 9,000 tons in 1956, 10,750 tons in 1957, and has been increasing since. The volume of palm oil consumed locally in Nigeria is not known, but it is believed by some government officials that more oil is consumed within the country than is exported.

Palm products, palm oil, and palm kernels are marketed commercially in French West Africa and Portuguese Guinea under price stabilization plans and quotas and, in Nigeria, Gambia, Ghana and Sierra Leone, through the government marketing boards much the same as for the marketing of peanuts.

About 90 percent of the palm oil exported from West Africa is produced in Nigeria. Most of this oil comes from the area around Port Harcourt, Aba, Opobo, and Abonnema, in the Eastern Region. The oil produced is of the best quality, an indication of the combined success of the introduction of mechanization (particularly the hand press), extension work, and price incentives for improving the overall quality of oil.

The Regional Marketing Boards in Nigeria have set up efficient marketing systems for handling and moving the large volume of palm products to port. The Board in the Eastern Region has licensed 50 buying agents for palm oil and 31 for palm kernels.

Palm oils purchased in Nigeria have improved in quality since 1950. A new grade of edible type palm oil called Special Grade was established in 1950, which provided for purchase of oil with a maximum free fatty acid content of 4.5 percent at a price premium. The free fatty acid requirement for this oil was reduced to 3.5 percent in 1955. After the 1952 marketing year, technical palm oil, which includes all the grades used for industrial purposes, was not purchased if it contained over 30 percent f.f.a. Grades IV and V were finally eliminated completely from the Marketing Board's program. The present grades of Technical Palm Oil are: Grade I, free fatty acid content more than 4.5 percent but not more than 9 percent; Grade II, free fatty acid content over 9 percent and through 18 percent; Grade III, free fatty acid content over 18 percent and through 30 percent. All grades of export palm oil must contain less than 2 percent by weight of water and extraneous substance and must not be adulterated.

Licensed buying agents, middlemen, and exporters in West Africa carry out the responsibility of marketing and purchasing, at minimum prices to producers, both palm oil and palm kernels. Purchases are often facilitated by forwarding cash advances and are sometimes interrelated

Palm oil in drums awaits refining at one of Nigeria's seven bulk oil plants. Nigeria produces nearly all of the palm oil exported from West Africa, and most of it goes to the U.K.

with merchandising activities. The licensed buying agents in Nigeria are paid a buying allowance which includes their profit and cost of service. The buying agent must provide buying stations (beaches) and labor for inspection, weighing, and supervision. He is also responsible for bagging kernels at 185 pounds gross and drumming palm oil, to insure that these will meet government tests.

The final inspection of palm oil and palm kernels is done by government inspectors as in marketing peanuts. However, in inspecting oil, checking f.f.a. and quality of oil is complicated by trade practices for taking moisture and impurities out of the oil and deceptive practices for lowering the f.f.a. quality of the oil. Both the oil drums and bagged kernels are sealed at the beaches to avoid pilfering and contamination. Kernels, like peanuts, are often inspected by probe sampling when necessary to prevent marketing delays.

Palm oil marketed in Nigeria is channeled through the operations of seven bulk oil plants. Treatment at these plants improves the quality of the oils to be exported, as well as stabilizing the f.f.a. content. The plants, located at Abonnema, Burutu, Calabar, Koko, Opobo, Port Harcourt and Apapa (Lagos), receive palm oil from the licensed buying agents, which is delivered either by truck, water, or rail from the beaches or from the Pioneer Oil Mills. Six of these plants are operated by Bulk Oil Plants of Nigeria, Ltd., and the plant at Apapa by the United Africa Company, Ltd. The oil is put through a continuous cleaning system, including centrifuging, which leaves only about 0.2 percent impurities in the palm oil, compared with nearly 1.0 percent at the time of receipt. The bulk plants, all located at ports, have storage and drumming, loading, and shipping facilities.

Nigerian palm oil and palm kernels are exported mainly to the United Kingdom, but palm kernels also move in substantial volume to Germany and the Netherlands. Most of the palm kernels shipped from Sierra Leone move to the United Kingdom and Germany. Palm kernels are shipped in bags and most of the palm oil is exported in bulk. Specially designed tankers handle most of the oil.

The modern mills in French West Africa produce oil of excellent quality and below 4 percent f.f.a. Most oil is shipped to France--about 11,400 tons in 1958--and some is used for domestic soap and margarine processing. The Ivory Coast and Dahomey have plants that refine palm oils.

Processing

In West Africa, and particularly in Nigeria, the palm oil industry is largely a home industry. It is estimated that over 90 percent of the palm oil is still produced by small mills. Most palm kernels are hand-shelled by women and children, who have traditional claims to the returns. Practically all the palm kernels are exported to Western Europe, where they are in demand for processing. Only a few local mills crush kernels in Nigeria, Ghana, Dahomey, and the Ivory Coast. As a result, the production and export of palm kernel oil is very small.

Palm oil processing techniques vary considerably. The comparative ease of crushing the fruit by small hand presses and other primitive home processes has made the industrialization of the crushing business a difficult task in other than plantation areas. Estimates show that about half the potential production of palm oil is lost by these relatively inefficient native crushing methods which extract less than 50 percent of the available oil in the fruit. In contrast, 90 percent of the available oil is extracted by modern methods.

Palm oil produced by traditional methods is often marketed in a highly deteriorated form and has such a high f.f.a. content that it can only be used for local consumption or commercially in soap. With proper harvesting of fruit and careful processing, the quality of palm oil (with a f.f.a. below 3.5 percent) in demand for edible purposes can be easily produced, and under recent marketing programs price premiums are given for low f.f.a. palm oils.

Remarkable progress has been made in the introduction of hand presses and Pioneer Oil Mills in Nigeria following World War II. Also, the government has encouraged native producers to have fruit moved directly after harvest to extracting plants for sterilization. A price incentive coupled with the adoption of new extraction techniques and harvesting practices has been successful, and around two-thirds of the palm oil is now marketed as Special Grade (edible); but 10 years ago very little oil of this quality was available from African processors. In addition to receiving increased returns, processors obtain 15 to 20 percent or more palm oil from the same volume of fruit. Industry representatives have ex-

pressed the belief that the quality of palm oil will continue to improve.

African traditional processing methods, which still produce about half of the export palm oil, are known as the hard oil systems and the soft oil systems. In the hard oil systems the fruit bunches are left to ferment and the oil is trodden out in a hollowed-out tree trunk. The oil is also extracted from the fermented and pulped fruit by boiling it in water and skimming off the oil that comes to the top. The soft oil systems produce a lower f.f.a. oil by sterilizing the fruit in boiling water immediately after harvest. The fruit is then pounded by pestle or wooden club in a mortar or drum sunk in the earth and the oil is removed by manual pressure. One method accomplishes this by placing the pounded fruit in a rope net and twisting. High quality oil (less than 2 percent f.f.a.) can be produced by the manual method.

The mechanical hand press has generally taken the place of the rope net since World War II, and it extracts about 65 percent of the available oil, compared with only about 45 to 55 percent by the older methods. Over 5,500 hand presses are in use in Nigeria, with a potential annual output of more than 100,000 tons of oil. An estimated 10,000 to 20,000 tons of additional oil is recovered from the same volume of fruit by this method.

After the oil is removed, the nuts are separated from the fiber and allowed to dry in the sun. Then they are cracked by hand, often with two rocks. It has been estimated that a million nuts must be cracked to make a ton of kernels. A few natives have small nut-cracking machines, operated by gasoline motors. If these machines become popular, an increase in kernel output may take place in the near future.

Installing Pioneer Oil Mills in Nigeria under a marketing board program has also aided in increasing the quality of export palm oil. This program has been made possible by the investment of funds or reserves accumulated by the marketing boards in their price stabilization activities. The program in Eastern Nigeria is implemented by the Eastern Regional Development Corporation. These small mills, obtaining 85 percent of the available oil, can process about 10 times as much fruit as a hand-press mill. In the Eastern Region of Nigeria there were 95 mills, in the Western Region around 22 mills, and in the Northern Region 3 in operation in 1958, but because of material shortages many have become unprofitable. These plants process fruit purchased directly from farmers, on the basis of weight. They compete, however, on a price basis (often unsuccessfully) with many local hand-press operators. Several of the mills are now operated as cooperatives.

The Pioneer Oil Mills utilize a centrifuge for extracting the oil, after the fruit has been sterilized and mashed to a pulp. Steam and power is developed from burning fiber and nuts from which the kernels have been extracted. A central drive shaft is used to operate all the machinery, including the nut-cracking machine, and the centrifuge. Hand labor is used extensively in materials handling; around 20 men and a mechanic are required to operate a plant with a capacity of 10 tons of fruit per day. The flotation process is used at these small plants, after the nuts have been separated from the fiber and cracked, to separate the palm kernels from the shells. Oil is purified by settling.

At least five large modern palm oil mills, utilizing hydraulic presses, are now in operation in Nigeria. These mills are located mainly on plantations and recover from 90 to 95 percent of the available oil. They also utilize automatic separating machines which produce palm kernels of nearly as high quality as those cracked by hand. Moreover, they have modern equipment for handling materials. This type of equipment can handle fruit in bunches and eliminates the hand labor involved in picking the fruit from the bunches. These larger mills--because of their location on plantations where supplies are plentiful and fruit is moved to the mill immediately--produce palm oil of very low f.f.a. Much of it is marketed separately as plantation oil.

There are six palm oil mills in French West Africa (one on the Ivory Coast, one in Togo, and four in Dahomey) and two in the French Cameroons. Most of the French West African mills are large modern operations that recover about 90 percent of the oil from the palm fruit. Like the large mills in Nigeria, they can handle fruit in bunches obtained from the growers or from the plantations. Crushing capacity of French West African mills is estimated at around 45,000 tons of whole fruit each season.

A small palm oil mill in Liberia, which because of the scarcity of fruit has been operated on a part-time basis, is now being enlarged to handle fruit from a maturing palm estate.

In areas where the palm fruit has a thick shell and a thin mesocarp, as in Western Nigeria, African production of kernels is high, but it is often difficult for commercial enterprises to crush the fruit profitably. As a result, many Pioneer Oil Mills operating in these areas have found that oil recovery at times is so low that product returns will not pay total costs, while other mills operate near the marginal level. It is in these areas where varietal improvement can increase production of palm oil significantly.

Prices

In order to encourage production of edible palm oil in Nigeria, the marketing boards since 1950 have offered producers price incentives over and above those paid for quality palm oil in the free market. These prices (as for peanuts) are fixed by the regional boards prior to the start of the marketing year. Since marketing palm products for export is a marketing board monopoly, the boards are in a position to pay premiums for quality oil, for which there is greater demand and higher prices in the world markets, and also to refuse to buy oil with a high f.f.a. This policy has been successful in several aspects. Not only has it resulted in 75 percent of the oil being marketed as edible quality, but it has also speeded up technological change in the primitive home industry and, to the advantage of all, produced more oil from the same volume of fruit production. The producers of quality oil have received an improvement in their terms of trade. The price differential in Nigeria between Special Grade palm oil and Grade I Technical palm oil at bulk oil plants was $28 a ton in the 1957-58 season. This incentive was as high as $48 in 1952. French territories have a guaranteed palm products market in Metropolitan France as a result of the import restrictions on foreign products and a protective tariff. Also, as previously stated, prices of fats and oils in the Metropolitan area are well above those on the free market. The price received for palm kernels in Dahomey has been about 10 percent higher than the world price. Palm oil is also priced well above the world level, and farmers selling fruit to the oil mills are receiving higher returns. A premium, as well, is given to producers to encourage marketing of whole fruit.

Oil mills in Metropolitan France pay about $300 per metric ton for palm oils having a low f.f.a. and processed from fruit from African palmeries in French West Africa. A quota--about 14,000 tons in 1956--is used to control import quantity.

Palm products marketed for local consumption in Portuguese Guinea, Sao Tome, and Principe are subject to annual quotas and price control by the local government. Products that are exported to Metropolitan Portugal are subject to the same controls, but they are under the Metropolitan Government.

In the main palm belt, high prices do not always bring increased sales. It has been said that farmers often prefer less work to higher earnings. On the other hand, reduced premiums have brought increased sales in Nigeria. Other factors, such as prices and supply of consumer goods, have been found to be important in determining volume sales in this area.

OTHER OILSEEDS AND OIL-BEARING MATERIALS

Soybeans and Sesameseed

Both soybeans and sesame are grown mainly in the Tiv areas of Benue Province. Soybeans are also grown in the provinces of Kabba and Zaria, and the Jos Plateau region. A small volume of sesameseed also is grown in French West Africa and exported to France.

In the Tiv areas where soybeans are grown in rotation, they are planted on land that is just being taken out of fallow or following millet in July and August. Sesame, also a rotation crop, is planted in May and June when the rains first start and on land that has previously been cropped by soybeans and millet. Often sesame is the last crop before the land is returned to fallow.

Sesame is a major export crop and is grown by only one tribe, the Tiv people. Production as a cash crop started with the introduction of taxation. Output has increased as a result of increase in the use of new varieties, better harvesting and cultivating techniques, and extension of area. Purchases in 1958 were about 18,400 tons, and exports that year totaled 13,200 tons. Research to improve yields of sesame are conducted at Samaru. Yields in native areas are low because the women, assigned the task of cultivation, have little time for it.

At Samaru, an effort is being made to introduce new high-yielding varieties of soybeans. Imported varieties are being

1949-58[1] [2]

Marketing year and region	Special grade palm oil[3]	Technical palm oil[4]					Palm kernels
		I	II	III	IV	V	
	U.S. cents per pound	*U.S. cents per pound*	*U.S. cents per pound*	*U.S. cents per pound*	*U.S. cents per pound*	*U.S. cents per pound*	*U.S. cents per pound*
1949	([5])	5.3	4.6	4.1	3.7	3.3	3.2
1950	6.6	5.3	4.6	4.1	3.7	3.3	3.2
1951	8.9	6.9	5.4	4.2	3.7	([5])	4.0
1952	10.0	7.6	5.9	4.4	3.7	([5])	4.5
1953	9.4	7.2	5.6	4.3	([5])	([5])	4.2
1954	8.1	6.2	4.7	4.1	([5])	([5])	4.2
1955:[3]							
Eastern	7.2	4.7	3.5	2.5	---	---	3.7
Western	7.5	5.6	4.7	3.7	---	---	3.9
Northern	7.5	5.6	4.7	3.7	---	---	3.9
Southern Cameroons	7.5	5.0	([5])	([5])	---	---	3.9
1956:							
Eastern	6.3	4.7	3.5	2.5	---	---	3.7
Western	6.8	5.6	4.7	3.7	---	---	3.9
Northern	6.8	5.6	4.7	3.7	---	---	3.9
Southern Cameroons	6.8	5.2	([5])	([5])	---	---	4.0
1957:							
Eastern	6.3	4.7	3.5	2.5	---	---	3.7
Western	6.8	5.6	4.7	3.7	---	---	3.9
Northern	6.8	5.6	4.7	3.7	---	---	3.9
Southern Cameroons	6.8	5.2	([5])	([5])	---	---	4.0
1958:							
Eastern	6.3	5.0	3.5	2.5	---	---	3.6
Western	6.8	5.6	4.7	3.7	---	---	3.7
Northern	6.8	5.6	4.7	3.7	---	---	3.9
Southern Cameroons	6.8	5.2	([5])	([5])	---	---	4.0

[1] From 1949-54 purchases by Nigeria Oil Palm Produce Marketing Board. Since that time, purchases by Regional boards: Western Regional Marketing Board, Eastern Regional Marketing Board, and Northern Regional Marketing Board. [2] Converted from British West African pounds. Palm kernels, basis delivered port of shipment, Palm oil, basis, bulk weighted when delivered at bulk oil plants. Minimum prices paid producers are based on these prices less produce sales tax on kernels and each buying station's transport differential. [3] Low acid oil, 4.5 percent f.f.a. - 1950-54, 3.5 percent f.f.a. - 1955-58, maximum. In 1955 Special Grade was subdivided into two grades, of which table shows prices for Grade A only. A - 3.5 percent, B - 4.5 percent f.f.a. maximum. Prices for Grade B were: Eastern - 6.0 cents per pound, Western - 6.5, Northern - 6.5. Plantation palm oil has had the same basic price as Special Grade palm oil since 1953. [4] Grades: I, up to and including 9 percent f.f.a.; II, over 9 percent f.f.a. - 18 percent; III, over 18 percent - 30 percent; IV-V, over 30 percent f.f.a. [5] Not available.

studied, including some U.S. varieties. Purchases in 1958-59 were estimated at 16,100 tons and exports in 1958 were 15,900 tons.

Both sesame and soybeans are purchased under programs of the marketing boards.

At the present time per-acre yields of both soybeans and sesame are low, and until high-yielding varieties are developed, expansion of these crops will be modest. As the sesame crop is complementary to the soybean crop, production will continue to be limited by the availability of the time and labor of the African women. Soybean production for export has expanded rapidly since 1950, but production is expected to be down considerably for the 1959 crop. However, production and exports will probably expand later, because Nigeria is finding markets for its soybeans.

Cottonseed

Cotton is grown in Northern Nigeria just south of the peanut belt, and also on the heavier laterite soils in the peanut area. Production has increased steadily in recent years, and in 1957 the increase over the previous season was estimated at 37 percent. Production averaged from 276 to 360 pounds of cotton per acre that year where cotton was planted as a sole crop. An increasing amount of cotton is being grown in French West Africa. Under the research program at Samaru, a high-yielding type has been developed. Considerable expansion in cotton production is expected as a result of improved varieties and the opening up of new territories in Bauchi and Bornu provinces.

Cotton output is rising, but cottonseed is not processed in West Africa. Quantities not used for seed or feed are exported.

Since cottonseed is not processed in Nigeria, all the seed obtained under the local ginning programs and not used for seed or feed is exported. Seed cotton purchased for export in 1956-57 amounted to 74,385 long tons and in 1957-58 increased to 126,182 long tons. Exports of cottonseed ginned from this amounted to over 67,551 tons in 1958.

Exports of cottonseed could expand somewhat if present plans for cotton production are implemented. Cottonseeds as well as soybeans were shipped to Japan in 1958.

Oilseeds of less importance

Trials of other oilseeds have been made in Nigeria and French West Africa.

In Nigeria considerable work has been done on sunflower and safflower seed. In Senegal and Dahomey, French West Africa, castor bean experiments have been carried out. Dahomey has an established crop of castor beans, but exports are below prewar levels. Great expansion in production of these oilseeds is not expected soon.

In Northern Nigeria and French West Africa the development of the shea nut processing industry has supplied shea butter for domestic consumption and for export. In the French Sudan, the Ivory Coast, and Upper Volta, French West Africa, the commercial industry has been developed to supply a large domestic demand, originally supplied by primitive home processing. In 1958, over 1,100 tons of shea nuts and 100 tons of shea nut oil were exported from French West Africa to France and the same year 13,200 tons of shea nuts were exported from Nigeria.

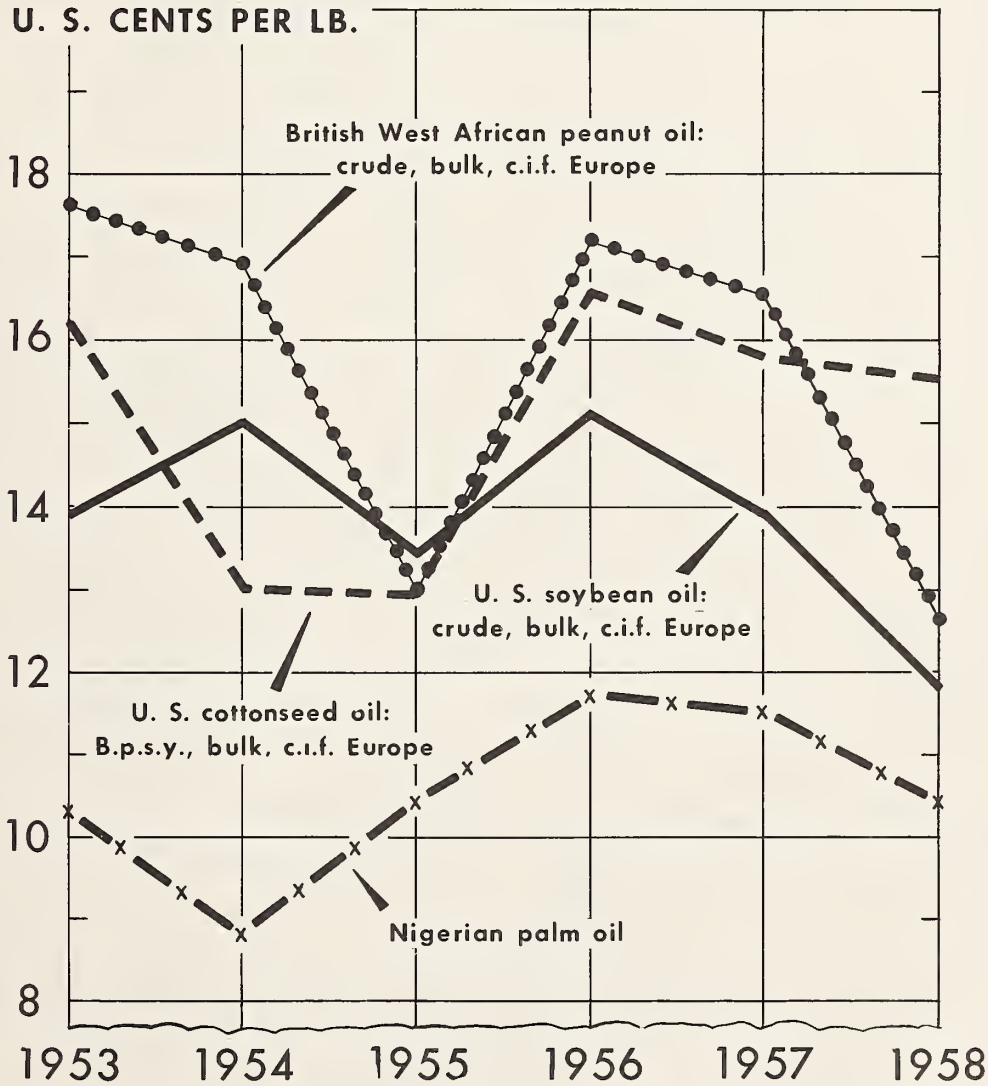
Shea nuts have been crushed successfully at the Northern Oilseed Processing Development Oil Mill at Zaria. This mill, operating six screw presses, can handle 200 tons of nuts a day; however, the industry has continually been confronted with material shortages. Shea butter has been marketed successfully in the United Kingdom. The tar-black residue is mixed with soft coal for fuel, but output far exceeds requirements.

In French West Africa, mechanical extraction methods have been introduced which have increased crushing efficiency on shea nuts 100 percent over manual extraction methods.

Processing coconuts for copra is a minor industry in West Africa and only small amounts of copra are exported (nearly 6,000 tons per year from Nigeria, over 2,000 tons from Togoland, and less than 1,000 tons from other French West African areas). Modern machinery for drying copra mechanically has been installed in several locations where coconut palms are producing in sufficient volume to make the industry profitable. But the demand for coconuts for edible uses in some of these areas is so great as to have raised prices to the point where it is no longer profitable to process the nuts for copra. In several areas, expansion of copra production has been proposed.

Price is key to markets for soft edible oils in Europe

Average Price in Western European Markets



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